THE BRICKBUILDER

VOLUME XVIII DECEMBER 1909 NUMBER 12

PUBLISHED MONTHLY BY ROGERS & MANSON

85 Water Street - - - Boston, Massachusetts

Entered at the Boston, Mass., Post Office as Second-Class Mail Matter, March 12, 1892.

Copyright, 1909, by ROGERS & MANSON

Subscription price, mailed flat to subscribers in the United States, Insular Possessions and Cuba	$5.00 per year
Single numbers	50 cents
Subscription price, mailed flat to subscribers in Canada	$5.50 per year
To Foreign Countries in the Postal Union	$6.00 per year

SUBSCRIPTIONS PAYABLE IN ADVANCE

For sale by all news dealers in the United States and Canada. Trade supplied by the American News Company and its branches.

ADVERTISING

Advertisers are classified and arranged in the following order:

	PAGE		PAGE
Agencies — Clay Products	II	Brick Enameled	III and IV
Architectural Faience	II	Brick Waterproofing	IV
" Terra Cotta	II and III	Fireproofing	IV
Brick	III	Roofing Tile	IV

Advertisements will be printed on cover pages only.

CONTENTS

PLATE ILLUSTRATIONS

FROM WORK BY

BLISS & FAVILLE; DELANO & ALDRICH; HARDING & SEAVER; CHARLES BARTON KEEN; PARISH & SCHROEDER; PEABODY & STEARNS; JAMES PURDON; ROBINS & OAKMAN.

LETTERPRESS

PAGE

REMAINS OF A RESERVOIR BELONGING TO THE EMPEROR DOMITIAN'S VILLA ..... Frontispiece

THREE MASSACHUSETTS SCHOOLHOUSES ..... *Kilham & Hopkins* 243

NEW SCHOOLHOUSE AT NEWTON, MASS. ..... *Ripley & Russell* 247

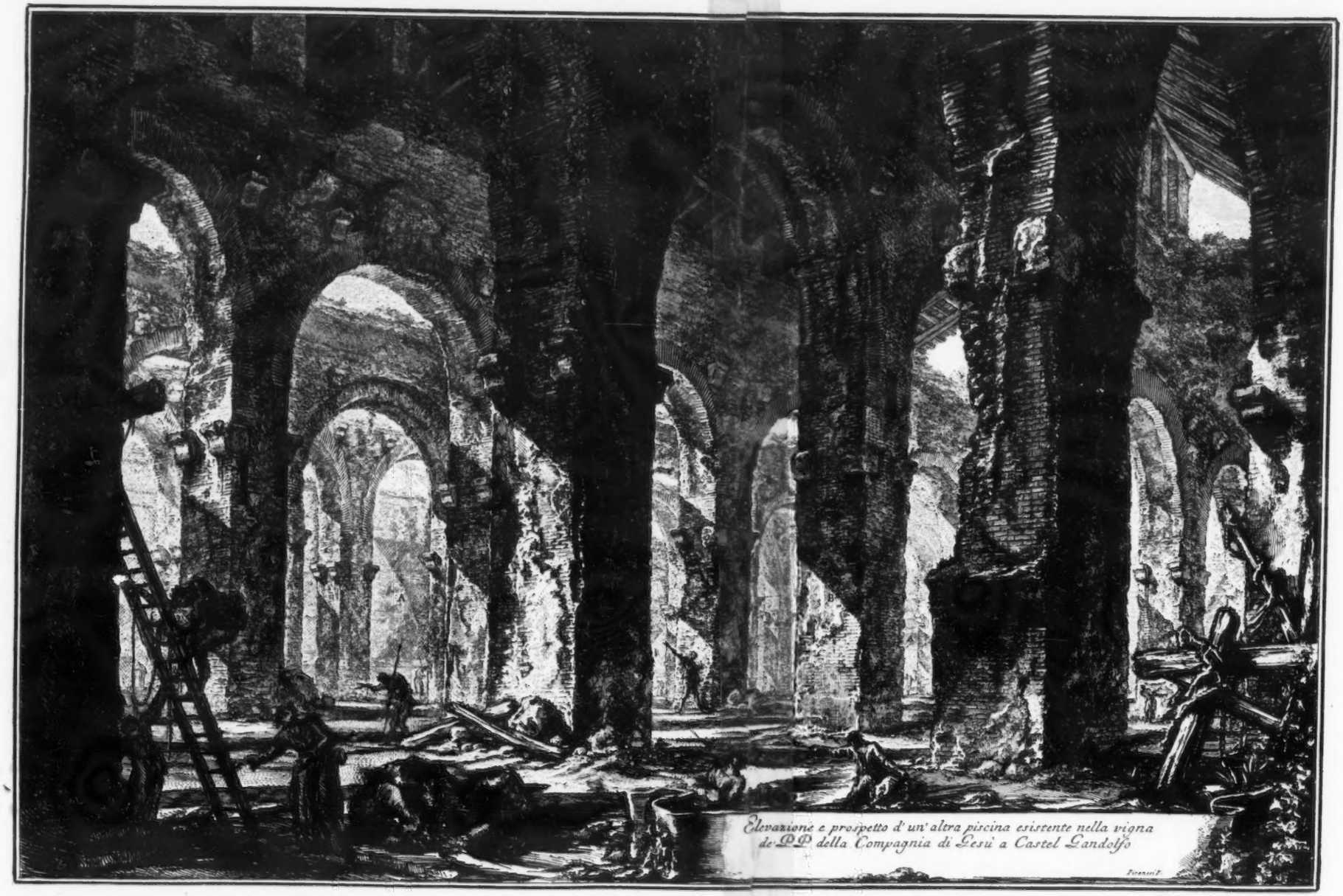
TERRA COTTA: ITS CHARACTER AND CONSTRUCTION — III ..... *Charles C. Thrall* 249

COMPOSITE HOLLOW TILE CONSTRUCTION ..... *George S. Drew* 254

SPECIFICATIONS FOR OFFICE BUILDINGS ..... *F. W. Winterburn* 257

PLATE ILLUSTRATIONS — DESCRIPTION 259

EDITORIAL COMMENT AND MISCELLANY 261



REMAINS OF A RESERVOIR BELONGING TO THE EMPEROR DOMITIAN'S VILLA IN THE ALBAN HILLS NEAR ROME.

GIOVANNI BATTISTA PIRANESI, DEL.

Among the most striking structures of the Emperor Domitian's Villa at Albano are the huge reservoirs built in the side of the hill and practically under ground. In addition to the print shown here, Piranesi has engraved other plates representing plans and sections so that their exact construction may be followed out. In this one there are thirty pillars of the same size and construction as those shown in the engraving, all faced with brickwork, as are the four walls.

THE BRICKBVILDER

VOL. 18 NO. 12 DEVOTED TO THE INTERESTS OF ARCHITECTVRE IN MATERIALS OF CLAY DECEMBER 1909

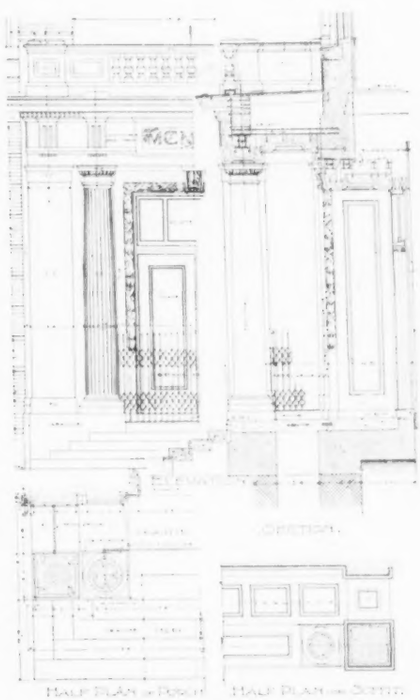
Three Massachusetts Schoolhouses.

KILHAM & HOPKINS, ARCHITECTS.

THE three school buildings illustrated in this article, the Salem High School, and the Williams and Shurtleff Schools in Chelsea, were all completed during the year 1909 and possess certain constructional features in common. The exteriors are of red water struck brick laid Flemish bond and terra cotta trimmings, with brick heat and vent ducts, and practically all brick interior walls. The boiler houses and considerable portions of the first floors are of reinforced concrete slabs on steel beams. The floors and roof frame are of steel girders and trusses, with Georgia pine joists, and are wire lathed throughout. The staircases are all fireproof, made of iron and slate and enclosed in brick walls. The roofs are of asphalt composition, with copper flashing carried up parapet walls and under copings. The ventilation is by the mechanical system, which forces the fresh air through concrete tunnels under the basement floor to the brick up-takes with automatic temperature control. The Salem High School has in addition a "forced hot water" heating apparatus.

All interior finish is in oak. Individual ventilating closets and urinals with slate partitions are used in every case. The "smoke doors" enclosing the stairways and the double entrances to each school room are requirements of the local inspectors of the Massachusetts District Police.

In these schools the intention was to have the costs moderate and the results most durable and attractive. While not strictly "fireproof" the buildings are nearly so in fact, and are fully as secure from fire danger. The costs per cubic foot given include in all cases general contract, plumbing, heating, ventilating, power plants, lighting fixtures, grading, seeding and curbing the grounds, granolithic outside walks and steps.



DETAILS OF MAIN ENTRANCE, WILLIAMS SCHOOL.
Kilham & Hopkins, Architects.

HIGH SCHOOL, SALEM. The building is located on a lot which is 25 feet above the level of the street. The architects have used the Georgian style in order to have the school harmonize with the colonial buildings of old Salem. The plan is practically a hollow square with the assembly hall in the center, and is specially arranged to permit of a future wing across the rear of the building.

The central pavilion emphasizes the vestibule and main entrance on the first floor, the school library on the second floor, and a large lecture room for science on the third floor. In addition to the library the second floor contains the gallery of the assembly hall, seven class rooms, four recitation rooms, and toilets. The third floor provides for three class rooms, four recitation rooms, laboratories for chemistry, physics, botany, and domestic science, as well as rooms for mechanical and freehand drawing.

The building is arranged for "home" desks for 864 pupils, with ten extra recitation rooms, beside rooms for special branches. The proportion of recitation to class rooms depends upon the curriculum of the school and it would seem to be fair to rate the capacity of a high school by the total seating capacity of class and recitation rooms.* Figured in this way the building accommodates 1,100 pupils and cost complete $272 per pupil.

There are four entrances to the building and the same number of stairways that run from the basement floor to the third floor, with a width of 5 feet in the clear. The floors of the corridors are terrazzo, while all other flooring is of maple finished with two coats of oil. Quartered oak with antique stain, three coat work well rubbed down, is used throughout the interior for trimming, with the exception of the assembly hall, which is treated in white, with gray walls. The assembly hall seats 1,400 people. The walls of the class rooms are colored in two tones of buff, the darker shade being used on the burlap to prevent soiling,

* Vide Boston Schoolhouse Commission Report, Vol. IV., page 2.

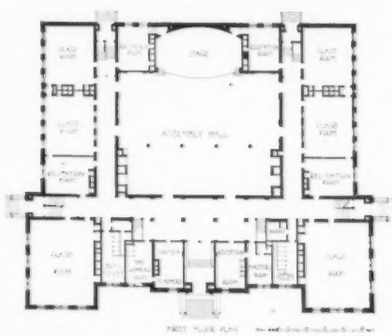
plates representing plans and sections so that their exact construction may be followed out. In this one there are thirty pillars of the same size and construction as those shown in the engraving, all faced with brickwork, as are the four walls.

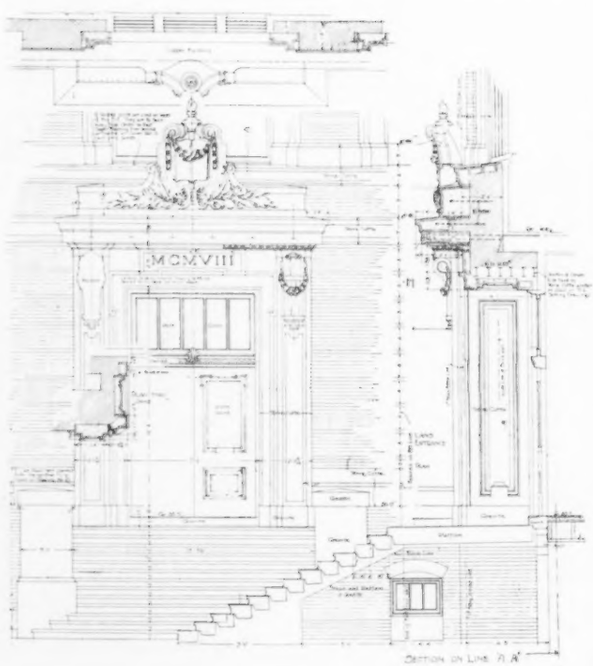
SALEM HIGH SCHOOL,

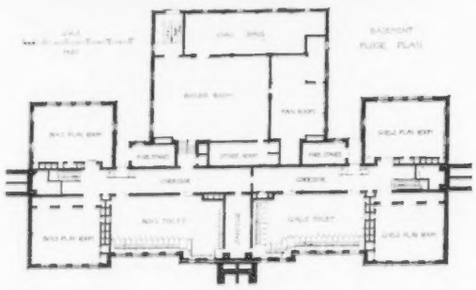
SALEM, MASS.

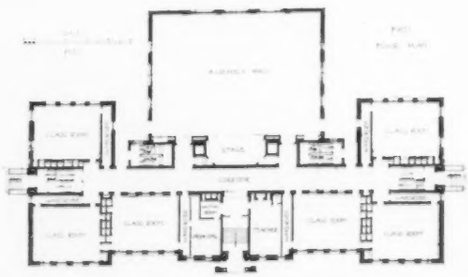
Kilham & Hopkins,

Architects.





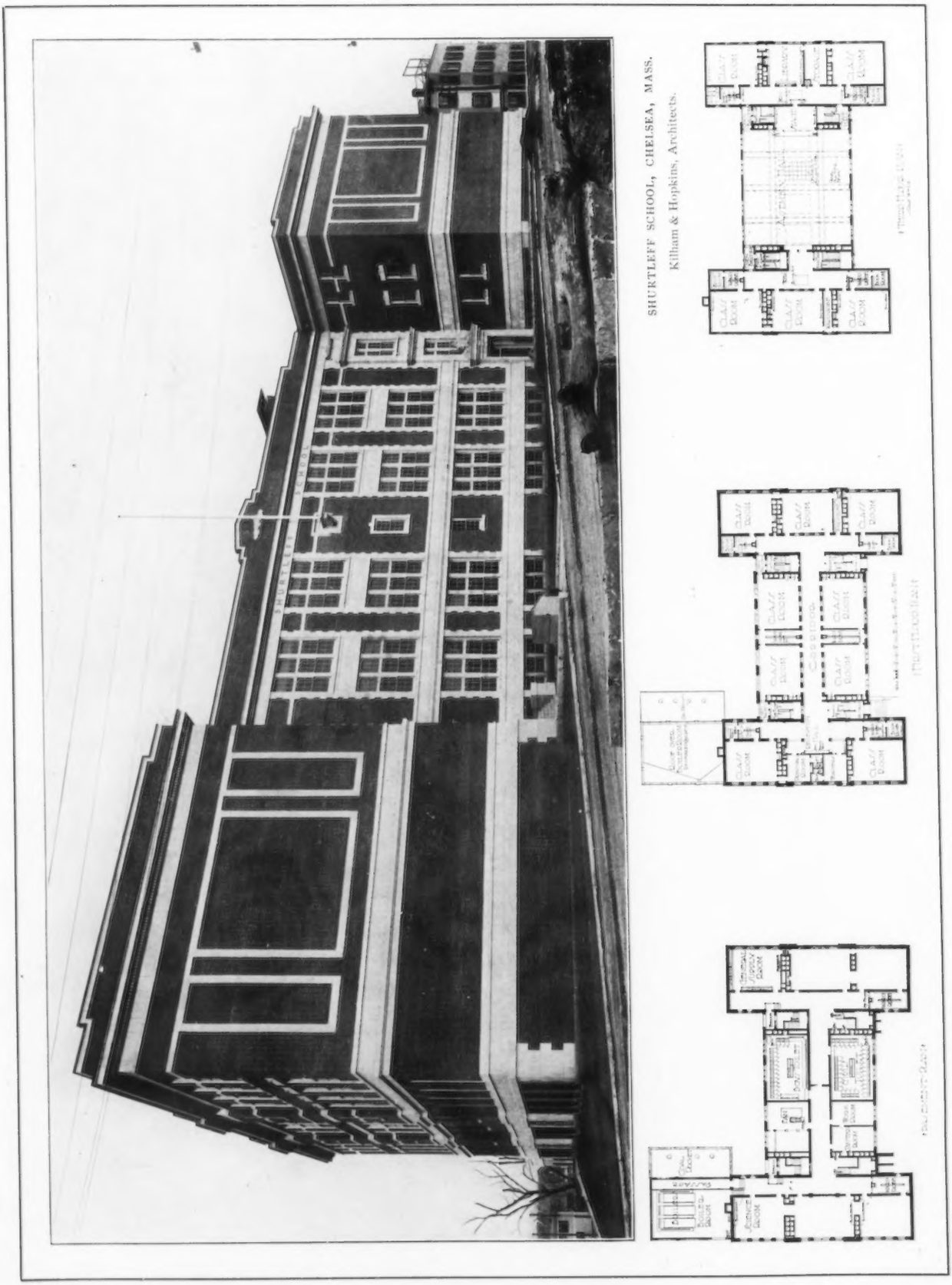




WILLIAMS SCHOOL,

CHELSEA, MASS.

Kilham & Hopkins, Architects.



SHURTLEFF SCHOOL, CHELSEA, MASS.

Kilham & Hopkins, Architects.

while the lighter shade is used on the plaster above on account of its restfulness to the eyes.

The pupils' clothing is kept in individual ventilated steel lockers in two large and well lighted basement rooms. These lockers are 12 inches by 12 inches and 60 inches high. Basement entrances are arranged giving direct access to locker rooms. A complete chemical fire extinguishing plant is installed in the basement with ten stations throughout the building, equipped with hose reels and boxes, when by breaking the glass the pressure can be immediately applied. The building contains a complete independent electric lighting plant.

The total cost, including all furnishings and equipment, was about $300,000, and the cost of the building, exclusive of furnishings, about 16 cents per cubic foot.

Williams School, Chelsea. This building has been designed as the central structure of a future group of three and contains the assembly hall and boiler plant for the entire group. The other buildings are to have sixteen rooms each. The assembly hall is on the first floor and is arranged so that it may be readily used by the general public without entering the main building.

The floors throughout the building are of rift Georgia pine. The general trim is slashed oak. Slate blackboards and dadoes of burlap are found in all class rooms. The stair construction consists of iron everywhere, except the treads, which are of slate. In addition to the regular stairs there is a special type of fire escape stairs which are enclosed in brick towers included within the outside walls of the building and yet entirely isolated from the interior. They are so planned that no one can enter them without first passing out of doors upon an open balcony. This precaution was taken so that the towers would always be free from smoke in case of fire.

There are twenty class rooms which accommodate 50 pupils each, making the total number of 1,000 scholars. There are also four fully equipped basement rooms.

The cost of the entire building is $166,829, or approximately 16½ cents per cubic foot. The cost per pupil is therefore $166, which is high for the building already built but will be very moderate when the proportionate cost of the assembly hall is charged to the 1,600 additional pupils who will occupy the remaining buildings of the group.

Shurtleff School, Chelsea. This structure is one of two wings that have been planned and which will eventually be connected by means of the low fireproof boiler house. Through this boiler house will run a wide corridor, so that there will be easy access from one wing to the other. This plan gives an example of the H type of building, which affords a better opportunity of lighting the large rooms than the other well known types. The red water struck brick on the exterior blends harmoniously with the white terra cotta, presenting a very bold design at the corners as compared with the rather open and delicate style of the central feature. The mullioned windows are arranged so as to furnish the largest amount of light possible.

There are twenty-nine class rooms, beside manual training and domestic science rooms, which accommodate a total of 1,450 pupils. These rooms have burlap dadoes with tinted plaster above. The blackboards throughout are of slate. The floors are of rift Georgia pine, while the rest of the woodwork is of slashed oak. There are four stairways from the basement to the top floor, two of which are closed in and are only accessible from an open balcony, which allows of escape in case of fire by means of an avenue shut off from the rest of the building, and proof against smoke.

The indirect system of steam heating by means of fans is used in this school together with an automatic device for temperature control.

The cubical contents of the building is 1,041,646 cubic feet, while the entire cost is $161,203. The cost per cubic foot is about 16 cents and the cost per pupil about $114.

Both the Shurtleff and Williams Schools are lighted throughout with Tungsten lights, with seven outlets to each class room. In addition gas is provided for all corridors, stairways, and assembly hall. All electric lights in connection with exits are on a separate circuit from the rest of the building. Fire alarm, program clocks, and telephones are provided.

New Schoolhouse at Newton, Mass., Nonantum District.

RIPLEY & RUSSELL, ARCHITECTS.

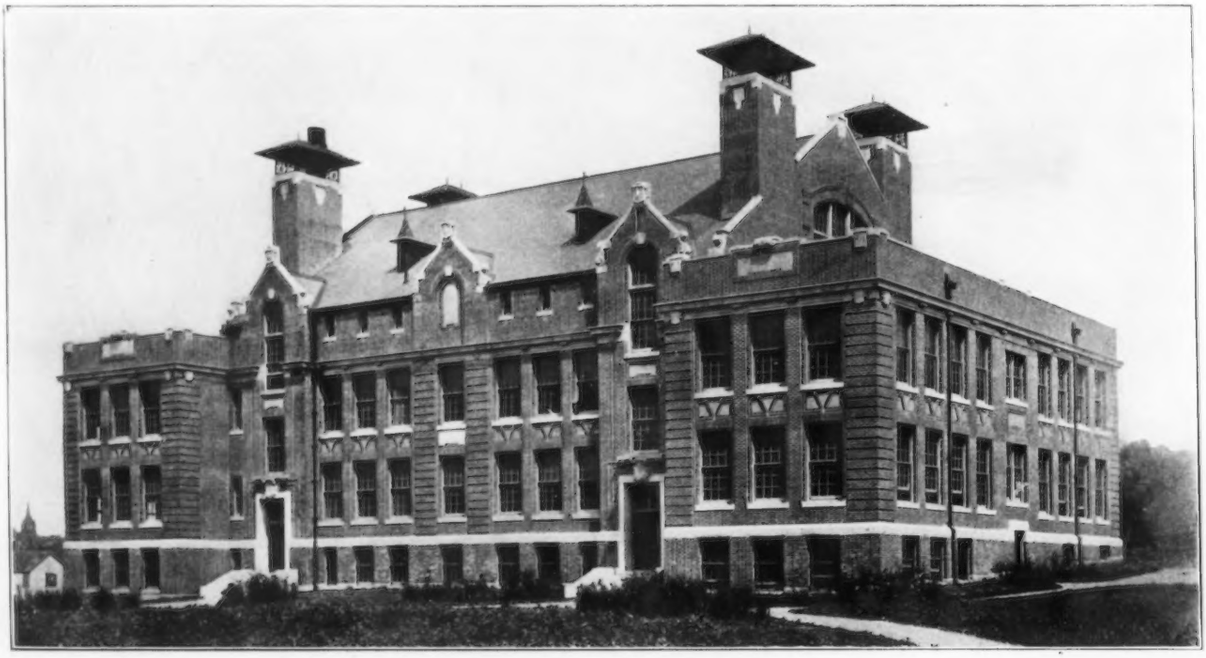
THE schoolhouse has a commanding site, situated on a small hill with ample grounds surrounding the building. A large athletic field has been planned on an adjacent lot, which, in connection with the large space given up to play rooms in the basement, assures the pupils of excellent opportunities for exercise.

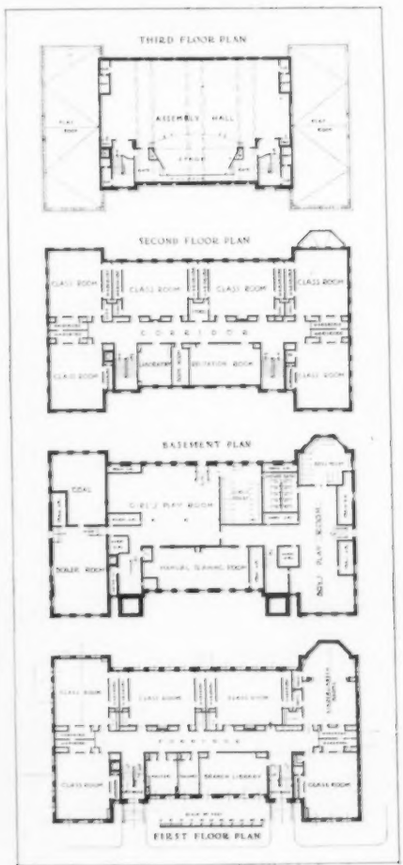
The exterior is a very frank expression of the plan, which is symmetrical in its general arrangement. The brick is red with wide white mortar joints, all of which harmonize with the limestone trimmings. Green slate has been used on the roof and copper on the dormers and ridges. The windows are arranged to give the maximum amount of light.

The floors throughout the building are of Georgia pine, with no finish on them. The walls of the class rooms consist of rough plaster with a burlap dado 7 feet high, the color of which is a light soft green. The halls are finished in gray with woodwork of birch, stained red. Two flights of stairs run from the basement to the third floor and are constructed of iron with asphalt treads. Special provision has been made in the basement for ten shower baths. The class rooms are provided with closets in addition to the wardrobes.

The building is supplied with steam heat and is equipped with the "gravity" system of ventilation.

The school accommodates 800 pupils and cost $100,000. The cost per cubic foot was 16.6 cents, which included clocks, telephones, and bells. Including the cost of grading the extensive grounds, building walks, paths, etc., the cost per cubic foot was 17 cents.





SCHOOL AT NEWTON, MASS., NONANTUM DISTRICT.
Ripley & Russell, Architects.

Terra Cotta: Its Character and Construction—III.

BY CHARLES U. THRALL.

IT HAS been the custom in years past for manufacturers to joint their terra cotta into comparatively small pieces, and this custom has been accepted by architects as one of the necessary evils to be encountered in the use of the material. In a previous article it has been explained how very large pieces may at times be safely made, but ordinarily the best results are obtained when the blocks are not too large.

In some instances pieces that are quite small do not detract from the appearance of a design, as shown on Plate IX., but when white glazed terra cotta is used it is often objectionable to have a large number of joints discernible unless they carry out a structural idea, such as an arch, etc. Usually, in such a case, with a little care a design may be made so that many of the necessary joints may be hidden and the broad white surfaces give an impression of restfulness which would otherwise be lost.

Plate VIII. shows an example of this kind and contains many suggestions which are very valuable to consider in the ordinary run of work. The horizontal joints are a feature of the design, they being 1 foot 2 inches apart, probably look better than if the distance were greater, and at the same time, to facilitate the manufacture of the pieces, practically all of the vertical joints are hidden where the internal corners occur.

The first course to the pilasters, which acts as a base, has a projection so that if there is any irregularity in the shrinkage it will not be apparent, the course above being fully 2 inches less in length. This particular piece, although long, is a very safe one to make as it is almost square in section, and, being narrow, there is not much tendency to warp. The piece above this on which the moulding occurs is also made in one part in width, being very much the same kind of piece as that at the base, but it must coincide with the width of the one above it.

The third course of the pilaster and all those above, up to the course underneath the cap, are each divided into three pieces, there being a plumb joint separating the outer moulding from the ashlar panel. Owing to the fact that bricks may be built into the open spaces at the back of the terra cotta there is no objection to such a plumb joint even if it ran through several stories. The old idea of breaking bond, as is necessary in stone work, does not apply to terra cotta. On the Flatiron Building, New York City, the round corner at the point of the building is so constructed that there is a plumb joint at the internal angle where this round corner connects with the main wall, this joint running from the bottom of the building up to the cornice. In many other of our tall buildings this method has been employed so that there need be no misgivings about jointing terra cotta in such a manner, especially as every piece as now made by the leading manufacturers has an anchor hole in the top bed into which may be inserted a strap anchor, which is built into the wall, as shown on Plate XI. This, together with the building of the bricks into open spaces in the back of the terra cotta, firmly ties the material to the wall ; in fact, it is unnecessary to use an anchor in every piece. Sometimes it is well to put one in every third piece, and at other times in every third or fourth course. On buildings of moderate height, where there is slight projection to the course, anchors are not necessary at all.

The block at the corner, at the left of the pilaster at plan "A–A," is separated from the pilaster pieces with a plumb back-checked joint with the bond cut off at an angle.

As each piece of terra cotta must be "turned out" of the mould when it is rather soft the edges and corners which will show at the building should have some protection. This bond being made at an angle is so arranged that no corner which is to be finished will rest on the board on which the piece is "turned out," and in that way all the corners are protected from being chipped. At the same time the joint between the corner piece and pilaster is hidden by being back-checked. It is not necessary to run the bond of the moulding to the pilaster back of the face of the main wall pieces for any constructive reason, but simply to protect the edge which occurs at the internal corner from being marred when the pieces are "turned out" on the board, the bond being arranged in this manner for practically the same reason that the bond was cut off on an angle on the corner piece. Both of these pieces are so arranged that the open space is convenient for building the rough brick-work into the back of the terra cotta.

The ashlar panel pieces are somewhat more difficult to manufacture, owing to the fact that they are so thin, and on that account there is a greater tendency to warp. This is obviated to some extent by making the courses narrow. By hiding the joint behind the curve of the moulding there is afforded opportunity for adjusting the piece to the proper dimension. For instance, if these pieces should shrink slightly more than the piece at the second course of the pilaster there would be a larger joint than would be desirable. If they did not shrink enough it would necessitate cutting the pieces in the yard, which, of course, could be done, but by arranging a joint of this kind all the adjustment may be made, as a rule, without the expense of cutting, and still retain the appearance of tight joints. The pieces between the pilaster and the jamb of the window are arranged with the same idea so as to afford adjustment and protection to the edges. Up to the arch, therefore, no vertical joints are apparent. The arch is arranged with five voussoirs so as to maintain practically the same size pieces as the jamb pieces.

The frieze over the lintel is jointed in three pieces, but the joints are lost in the lines of the ornament.

The cornice to the window is rather more difficult to manufacture on account of the various members that must "take up." With the exception of the miter pieces the joint is placed under the plinth so that trimming can be done at that point to make the work fit.

The spandrel is so arranged that there is always a joint which may be trimmed and that there will be no two points which are so tied that they will not "take up." For instance, the piece at the side of the key in the span-

drel where the jib shaped portion of the sunken panel occurs, has two points which must "take up" with the adjoining piece, viz: where the sinkage of the panel occurs. But as there is a joint arranged on one side of this panel, following the curve of the circular jamb piece to the window, there is opportunity to trim at this point. The inner arch is separated from the outer arch, and the ashlar portion of the large voussoirs to the main arch are separated by a joint around the outside line of the arch. This is also a matter of economy as each one of the arch pieces may be made from the same mould, whereas if the voussoirs were attached there would be many more moulds necessary as each voussoir is different from the other.

The pilaster piece directly under the cap is made in one part for the same reasons that the pieces at the foot of the pilaster were made that way. The ornamental cap is jointed in the center, the joint following the line of the ornament and coming around and slightly underneath the rosette so that the joint is entirely hidden. The hidden joints are made, as shown by the detail, tight on the face and wide at the back, so that the pieces may be moved backward or forward and have the same appearance of tightness on the face.

Observe that in this design the terra cotta is again used as a veneer, the bond of the material being very slight. If this design were made in stone it is very apparent that there would be much more weight imposed upon the wall. All of these joints are so arranged that the pieces may be laid upon the rubbing bed and finished to an exact size, plumb, and square. A design similar to this is very economical if executed in terra cotta, especially if the widths of the bays and piers are all kept at practically the same dimensions, as the duplication in such a design together with the lightness of the material would reduce the expense very largely. This design was actually executed in gray terra cotta, but it would look particularly well in white matt glaze material, and there are also features which, if treated in color, would make the design most attractive.

In the example shown in Plate IX. the jointing is a feature of the design and therefore there is no good reason for an attempt to hide the joints. The rosettes are all made in separate pieces as they alternate in design. The ashlar pieces, although practically the same size as those shown on Plate VIII., are a more difficult proposition to manufacture, as each piece should be true at every joint. The simplest kind of a piece, the ashlar, is one of the most difficult to make properly in terra cotta because it is thin in bond and therefore has a tendency to curl or warp. The fact that these pieces may shrink

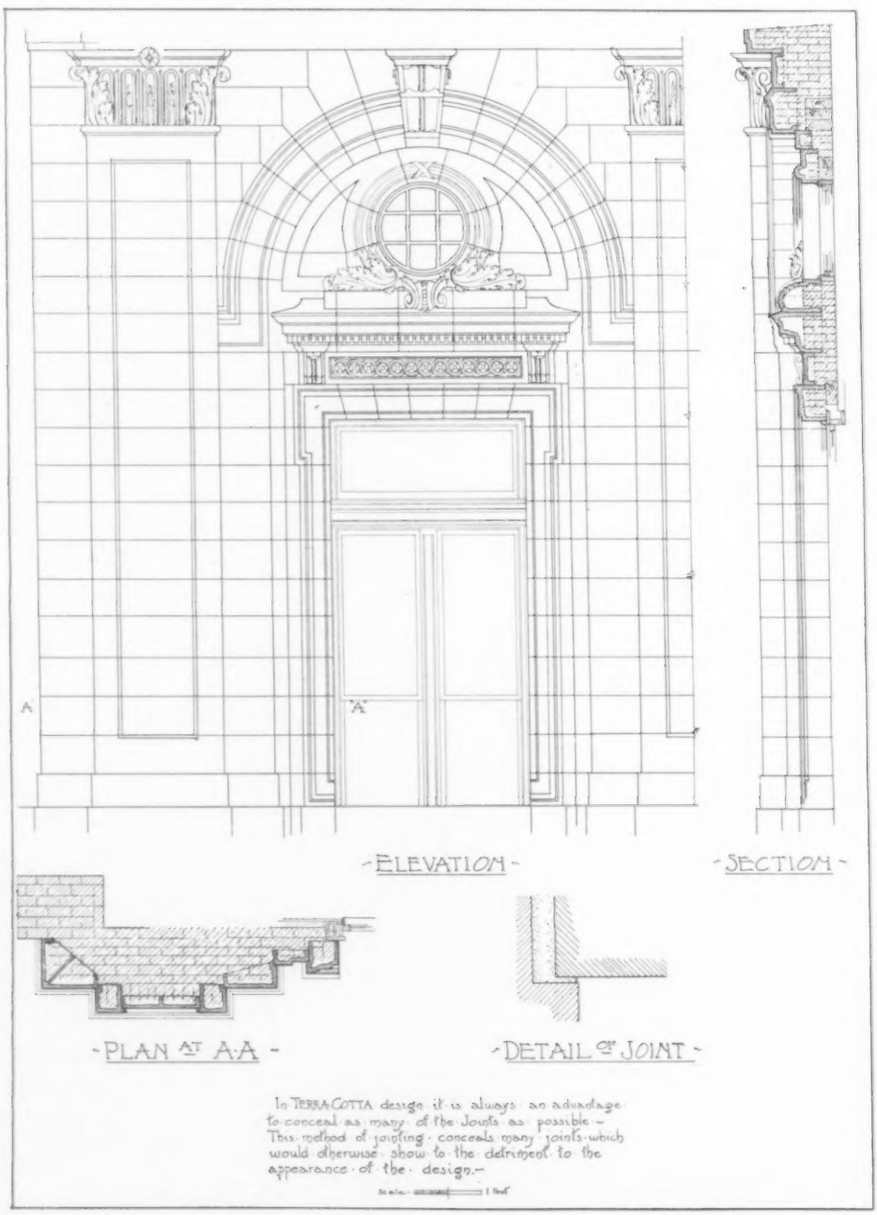

A
A
-ELEVATION-
-SECTION-
-PLAN AT A-A-
-DETAIL OF JOINT-
In TERRA-COTTA design it is always an advantage to conceal as many of the Joints as possible.— This method of jointing conceals many joints which would otherwise show to the detriment to the appearance of the design.—

PLATE VIII.

irregularly in size can be easily overcome by use of the rubbing bed, but should a piece warp too much in the burning the only remedy is to make another one to replace it, and in this design the warping would be more noticeable than in the design shown in Plate VIII.

If the dado moulding were not so wide it would be possible to obtain better results as to alignment. The soffit of the jamb is separated from the face so as to afford a place to be trimmed to properly fit the material. This design was carried out to some extent in the Hudson Terminal Concourse, New York City. It was made in

ment is usually of a high class for reasons explained in a previous article; second, the joints are more or less hidden in the ornament; and third, the surfaces and lines are so broken up by this ornament that absolute alignment is not so important and any slight inaccuracies in size or shape are undiscernible. When to the profuse ornamentation is added the effect of colored glazes, terra cotta becomes a medium for the expression of the highest type of architectural art.

As an example of profuse ornamentation, combined with colors, the Academy of Music in Brooklyn has at-

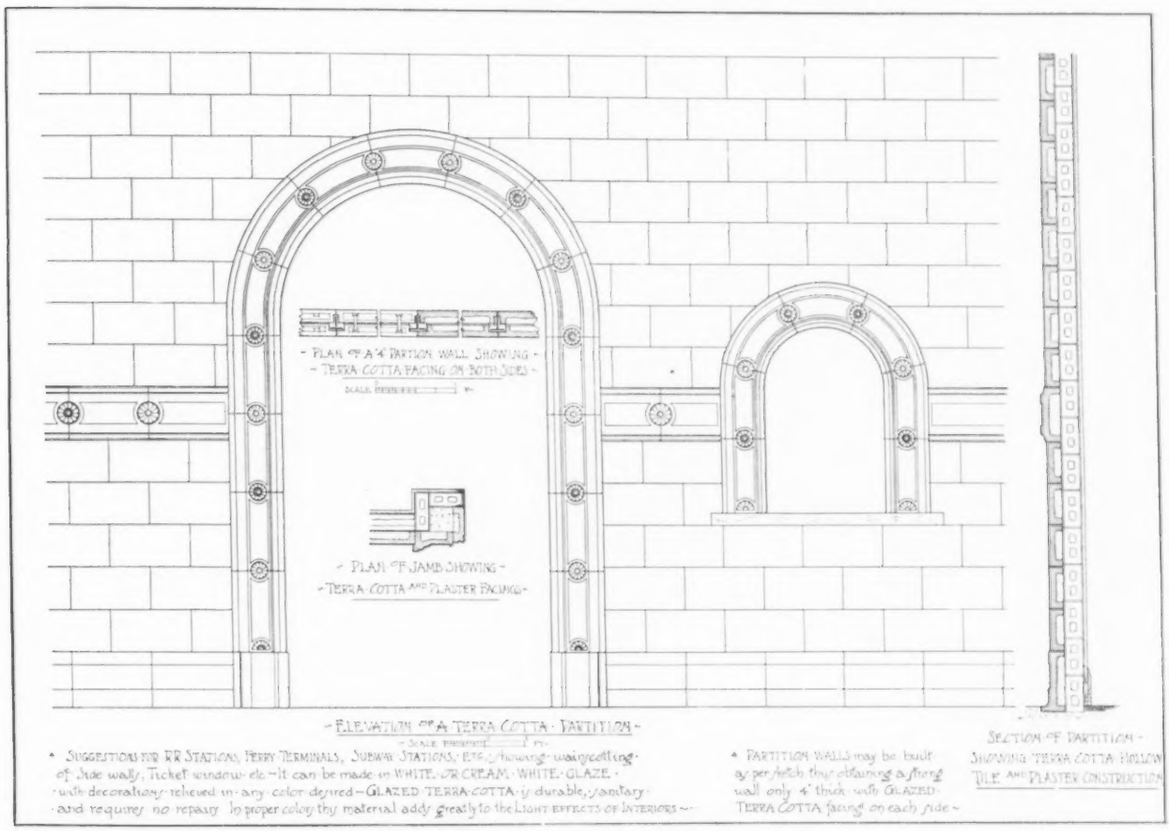

- PLAN OF A 4" PARTION WALL SHOWING -
- TERRA COTTA FACING ON BOTH SIDES -
- PLAN OF JAMB SHOWING -
- TERRA COTTA AND PLASTER FACING -
- ELEVATION OF A TERRA COTTA PARTITION -
- SECTION OF PARTITION -
SHOWING TERRA COTTA HOLLOW TILE AND PLASTER CONSTRUCTION
* SUGGESTIONS FOR RR STATIONS, FERRY TERMINALS, SUBWAY STATIONS, ETC., showing wainscotting of side walls, Ticket window etc - it can be made in WHITE OR CREAM WHITE GLAZE - with decorations relieved in any color desired - GLAZED TERRA COTTA is durable, sanitary and requires no repairs to proper color thy material adds greatly to the LIGHT EFFECTS OF INTERIORS -
* PARTITION WALLS may be built as per sketch thus obtaining a strong wall only 4" thick with GLAZED TERRA COTTA facing on each side -

PLATE IX.

white glazed material, the fields of the panels in the dado moulding and jambs being colored yellow.

Terra cotta has many things to recommend it for purposes of this kind, especially for the interiors of railroad depots, ferry terminals, hotel and theater lobbies, department store entrances, hospitals, etc., where a large number of people congregate.

White or cream colored full lustrous glaze would lend brilliancy to light effects, which is particularly desirable in subway stations or other places which must have artificial light during the daytime. As the material is hard and the glaze impervious to water, terra cotta is very sanitary, can be washed absolutely clean with water, and being durable does not require repairs.

When there is profuse ornamentation, terra cotta always looks its best for three reasons: first, the ornatracted much attention. Plate X., which illustrates the construction of the cornice for this building, suggests a most practical method of support for any cornice of this size and shape. Steel outlookers in the form of channel irons in pairs, placed back to back with 1 inch space between, are located over every alternate modillion. These channels are supported by braces placed at an angle of 45°. Parallel with the wall are placed angle irons, supported by the outlookers, and from these angle irons are suspended or anchored the several courses which are not built into the wall, as shall be explained in detail.

The first four courses are built into the wall in the regular way, the frieze being cut into two courses to afford adjustment in height. Care is exercised so that the bonds of not only these courses but all others as

well shall clear the iron work by fully 1 inch, so that there shall be no undue cutting at these points. As the dentil course is firmly built into the wall its nib becomes the tipping point for the courses above, which need have only as much bond as it has projection. But as this course is not bonded into the brickwork it is anchored by a rod which is bent around a pin placed in the ends of the terra cotta pieces, the rod being confined in a groove in the joint. The rod is placed as far forward as possible but so as to clear the back of the bond of the piece above. The upper end of the rod is hooked around an angle iron placed conveniently for that purpose.

As the egg and dart course is now firmly built its nib forms the tipping point for the course above, therefore the bond of this course may also be short. The panels between the modillions are supported in the same manner as the egg and dart course, with dowel pins and hangers, but the modillions are carried on pipes extending into the open space at the back. The rear end of each pipe may be built into the brickwork, the forward end being supported by a hanger passing through a hole made in the top of the modillion and between the two outer angles where it may be bent over the angle or have a nut and washer, the washer being wide and resting on the web of the angles. By tightening the nut proper adjustment may be easily made, whereas without the nut greater care must be used in bending the anchors over the angles, or else wedges must be placed between the anchors and the angle iron.

The cornice is now built up to the top of the modillions, forming a bed for the hanging style which is jointed so that the soffit pieces have sufficient support by resting on the sides of the modillions and on the panel pieces between the modillions. But as a safeguard two pipes parallel to the wall are passed through the pieces and anchors are hooked around these and carried up over the angles. Over the modillions the bond of the hanging style is cut away to allow space for the outlookers and anchors and also to reduce weight. Every alternate piece must be cut away in the back to allow for the end of the outlookers.

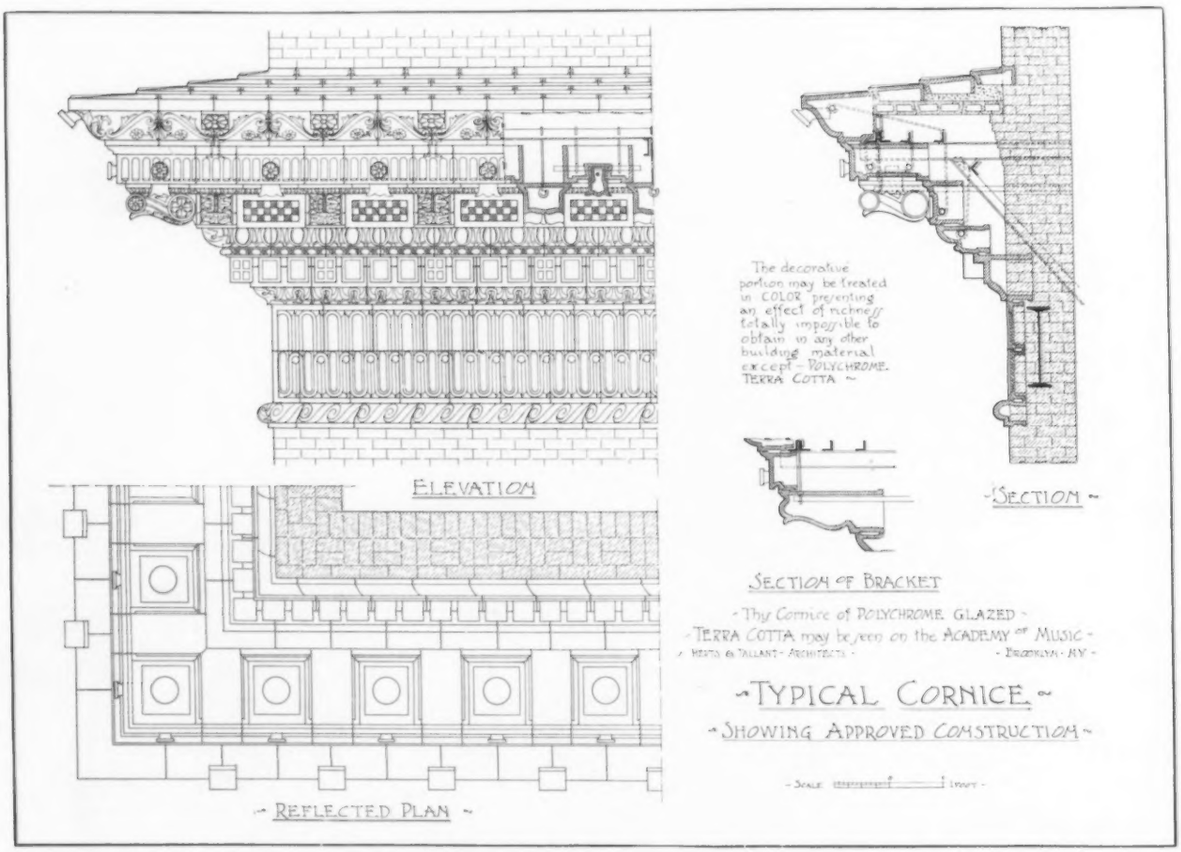
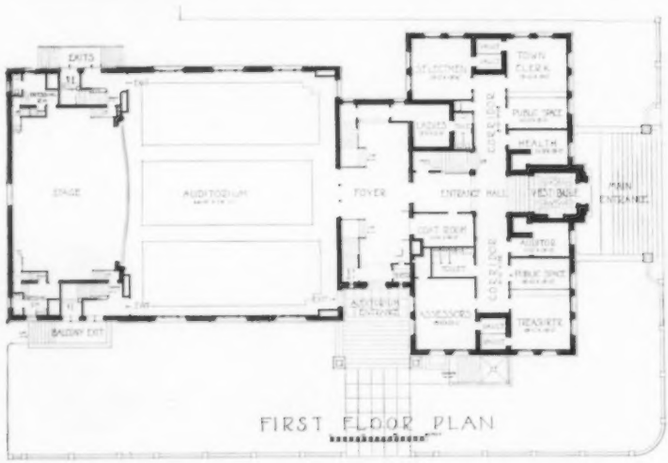

ELEVATION
REFLECTED PLAN
The decorative portion may be treated in COLOR presenting an effect of richness totally impossible to obtain in any other building material except - POLYCHROME. TERRA COTTA -
SECTION
SECTION OF BRACKET
- The Cornice of POLYCHROME GLAZED - TERRA COTTA may be seen on the ACADEMY OF MUSIC -
- HOWE & TALLANT - ARCHITECTS -
- BROOKLYN - N.Y. -
TYPICAL CORNICE.
SHOWING APPROVED CONSTRUCTION
- SCALE 1 INCH -

PLATE X.

The rosettes in the soffit and those of the crown mould are made in separate pieces to facilitate manufacture and for convenience in setting. Being separate they will also permit an interchange of designs or colors if desired. As these rosettes are more frail than other pieces, especially when projecting so far as shown on this design, it is much better to have them separate so as to save breakage, which might delay the building. If desired the soffit and crown moulding pieces could all be set before setting any of the rosettes.

The dowel at the back of the rosette is inserted in a hole made for that purpose and cemented fast, and in the case of the soffit rosettes there is a hole in the dowel

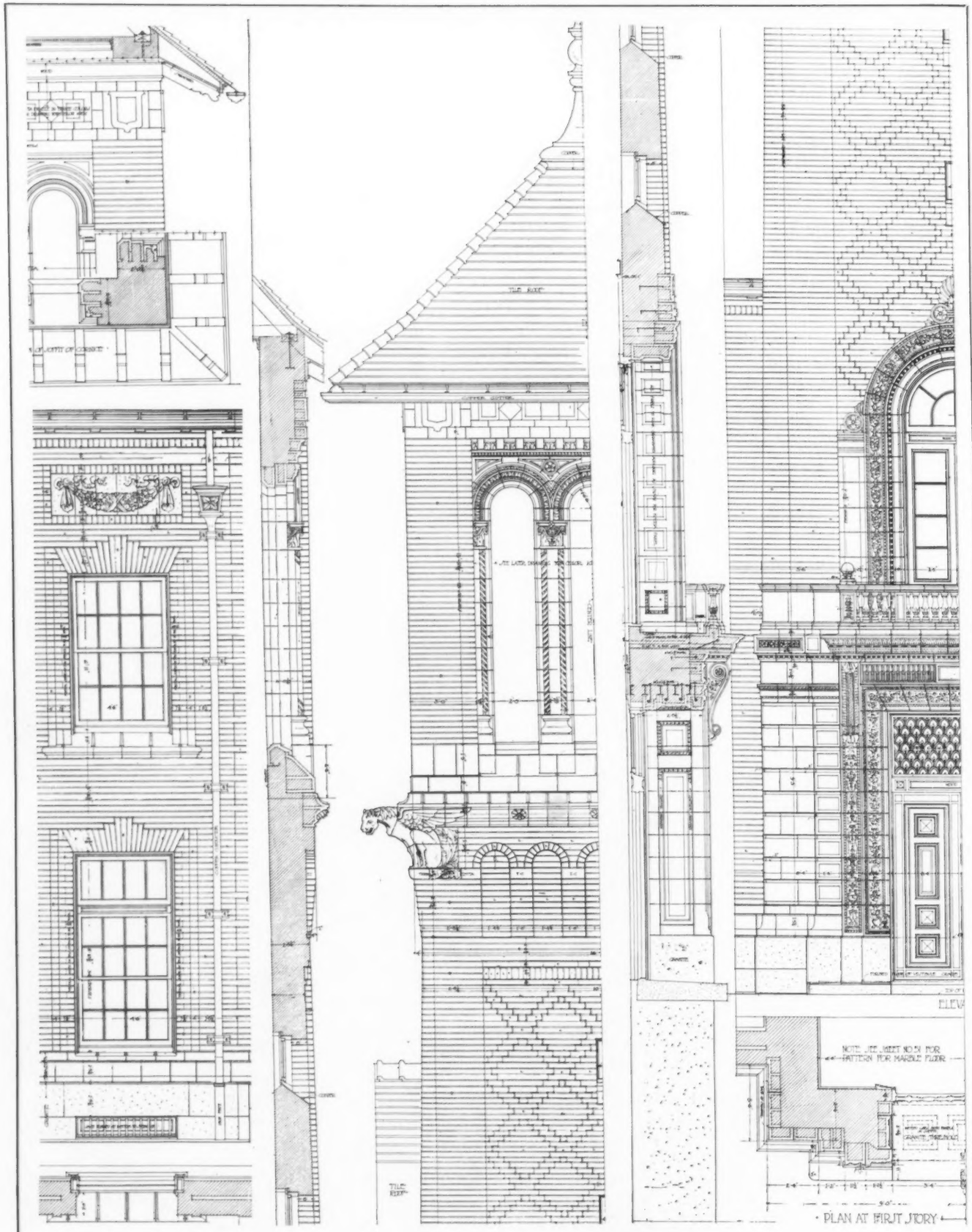


FIRST FLOOR PLAN

SECOND FLOOR PLAN

TOWN HALL, CLINTON, MASS.
PEABODY & STEARNS, ARCHITECTS.

UNIV OF MICH

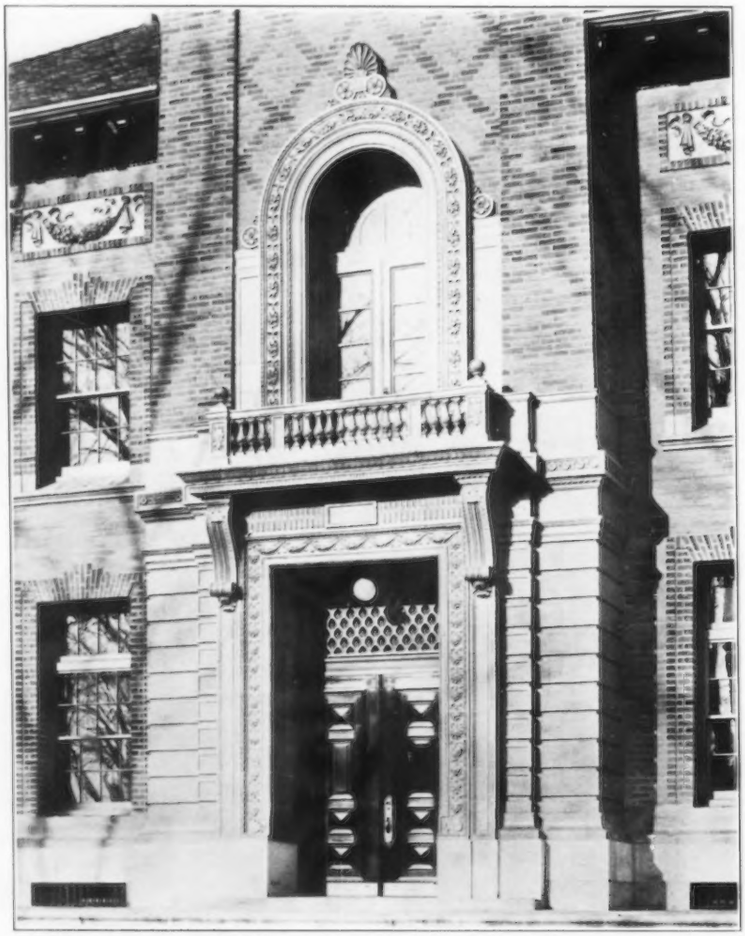


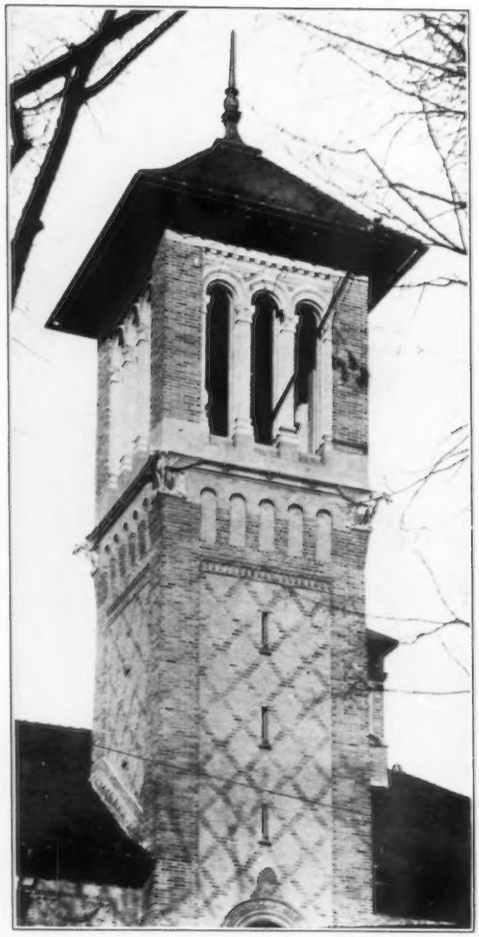
DETAILS OF WINDOWS, MAIN ENTRANCE, AND TOWER.

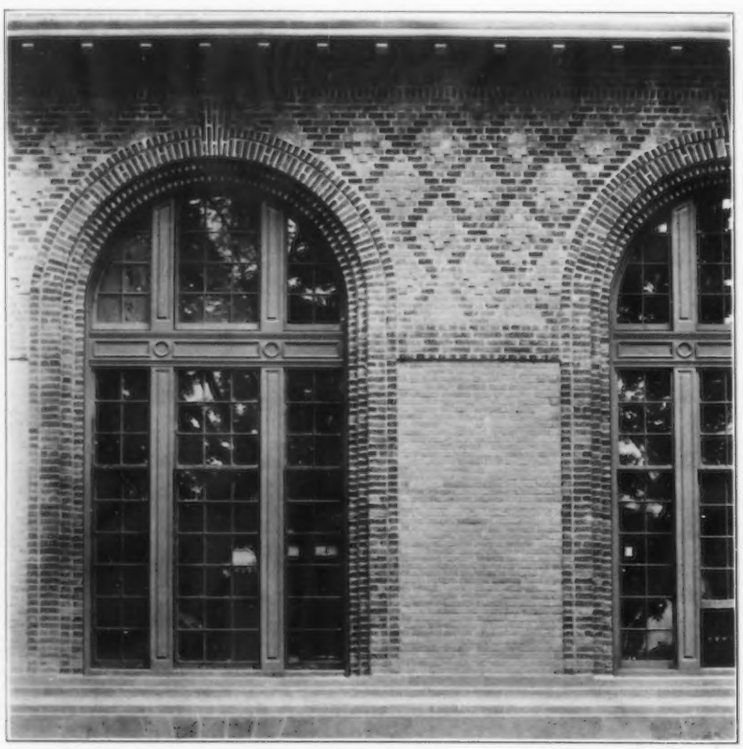
TOWN HALL, CLINTON, MASS.

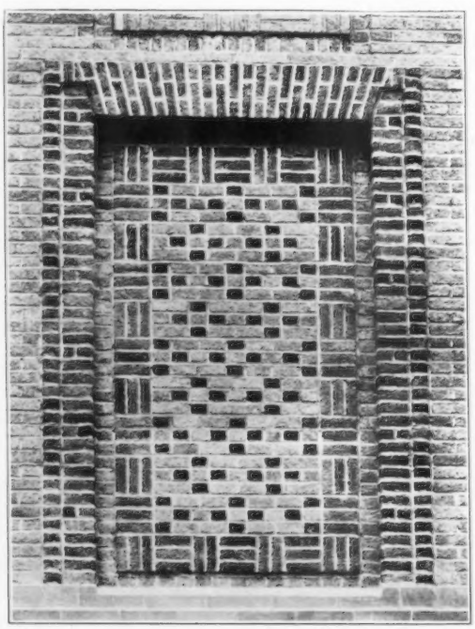
PEABODY & STEARNS, ARCHITECTS.

UNIV OF MICH



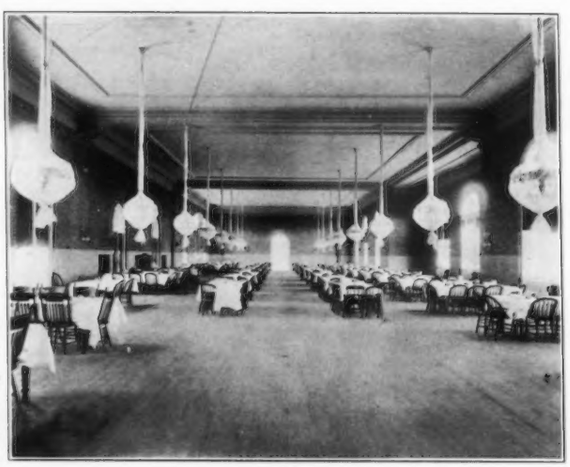


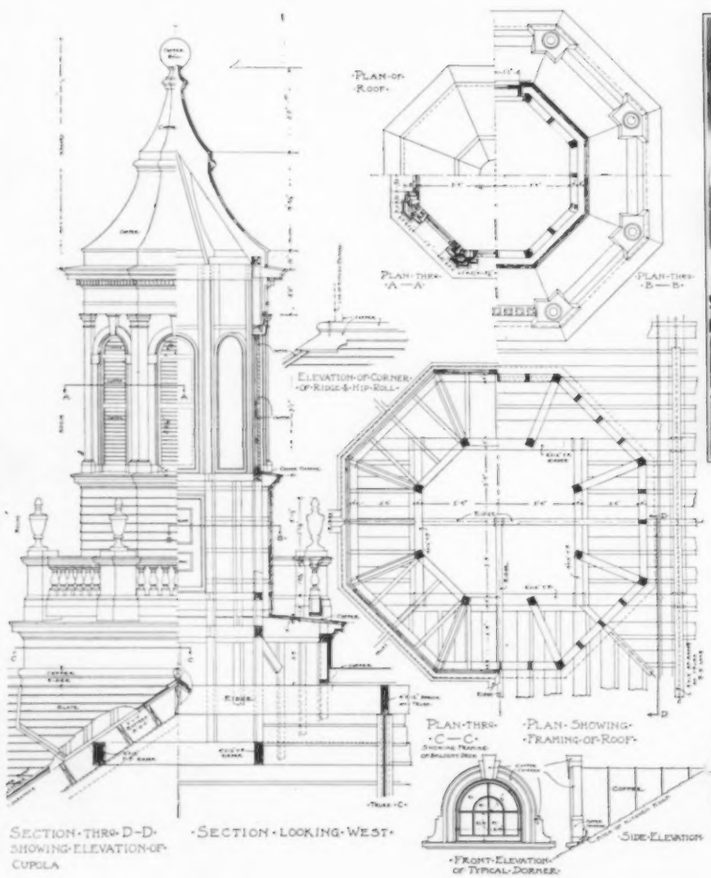


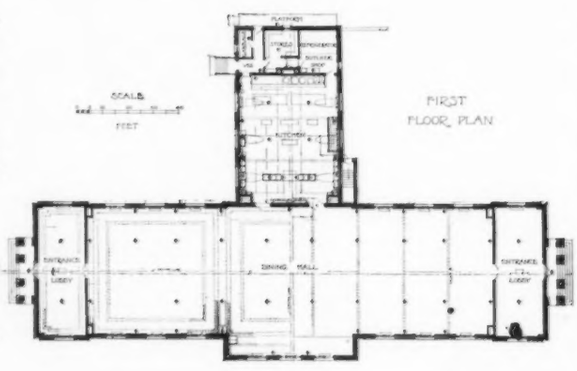


DETAILS OF
TOWN HALL, CLINTON, MASS.
PEABODY & STEARNS, ARCHITECTS.

UNIV OF MICH

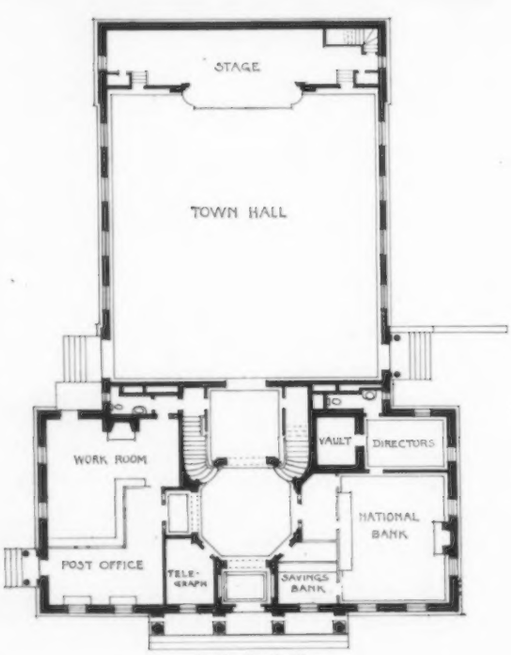



PLAN OF ROOF
PLAN THRO A—A
PLAN THRO B—B
ELEVATION OF CORNER OF RIDGE & HIP ROLL
PLAN THRO C—C
PLAN SHOWING FRAMING OF ROOF
SECTION THRO D-D SHOWING ELEVATION OF CUPOLA
SECTION LOOKING WEST
FRONT ELEVATION OF TYPICAL DORMER
SIDE ELEVATION



DINING HALL AT MOUNT HERMON BOYS' SCHOOL, MOUNT HERMON, MASS.

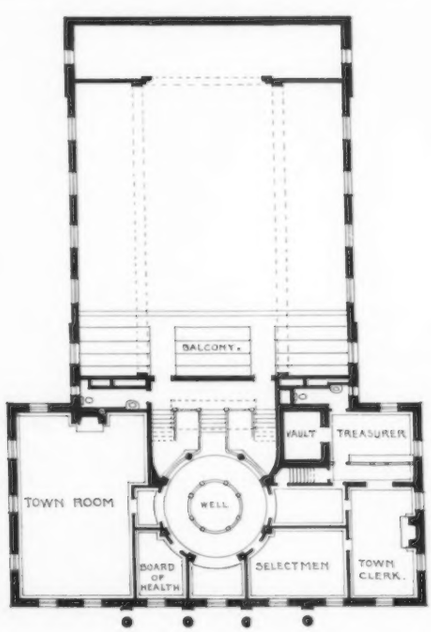
PARISH & SCHROEDER, ARCHITECTS.



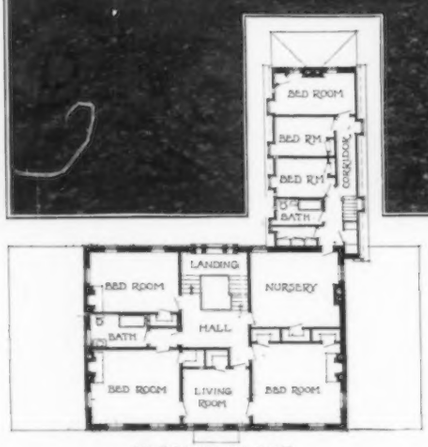
FIRST FLOOR PLAN

TOWN BUILDING,
LENOX, MASS.

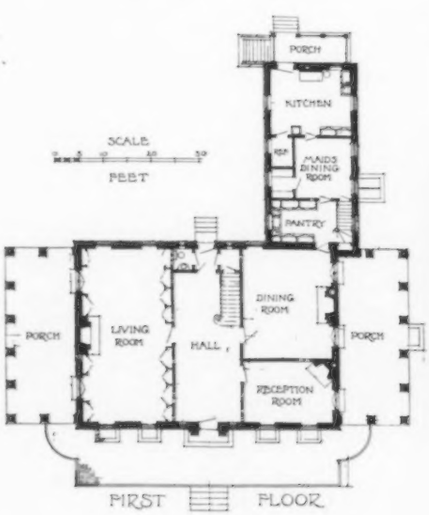
HARDING & SEAVER,
ARCHITECTS.



SECOND FLOOR PLAN

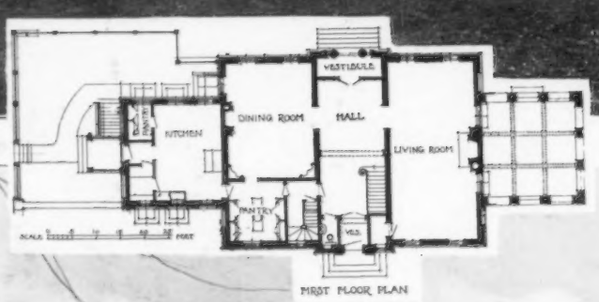


SECOND FLOOR

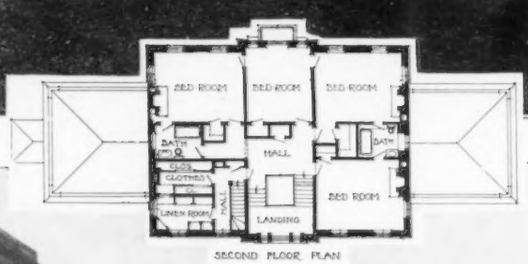


FIRST FLOOR

HOUSE AT VILLA NOVA, PA.
CHARLES BARTON KEEN, ARCHITECT.



FIRST FLOOR PLAN

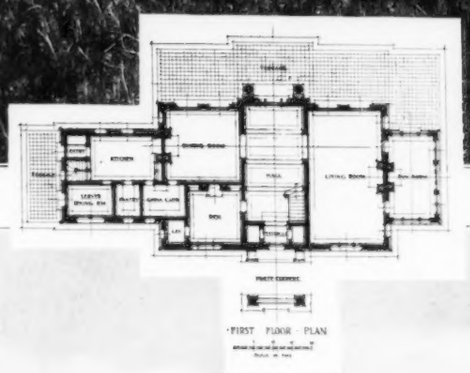


SECOND FLOOR PLAN

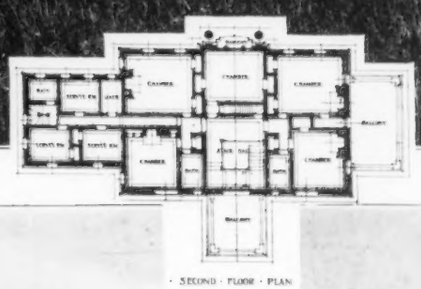
HOUSE AT BRYN MAWR, PENNSYLVANIA.

CHARLES BARTON KEEN, ARCHITECT.

UNIV. OF MICH.



FIRST · FLOOR · PLAN

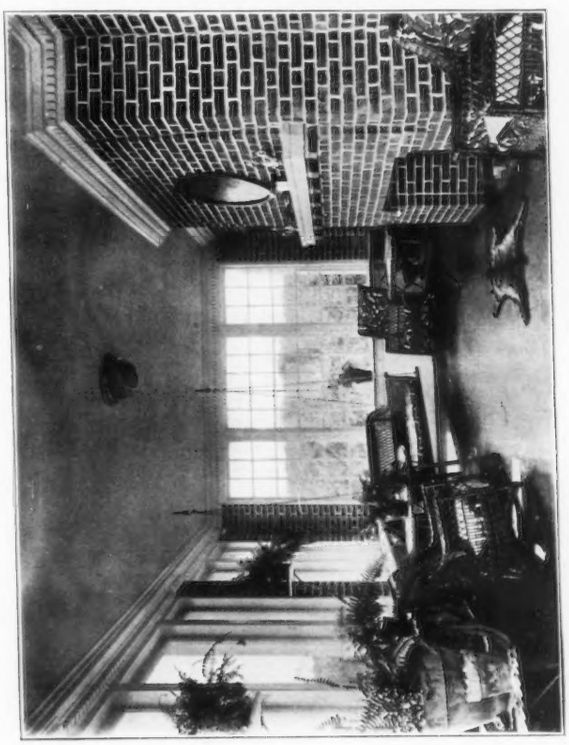


SECOND · FLOOR · PLAN

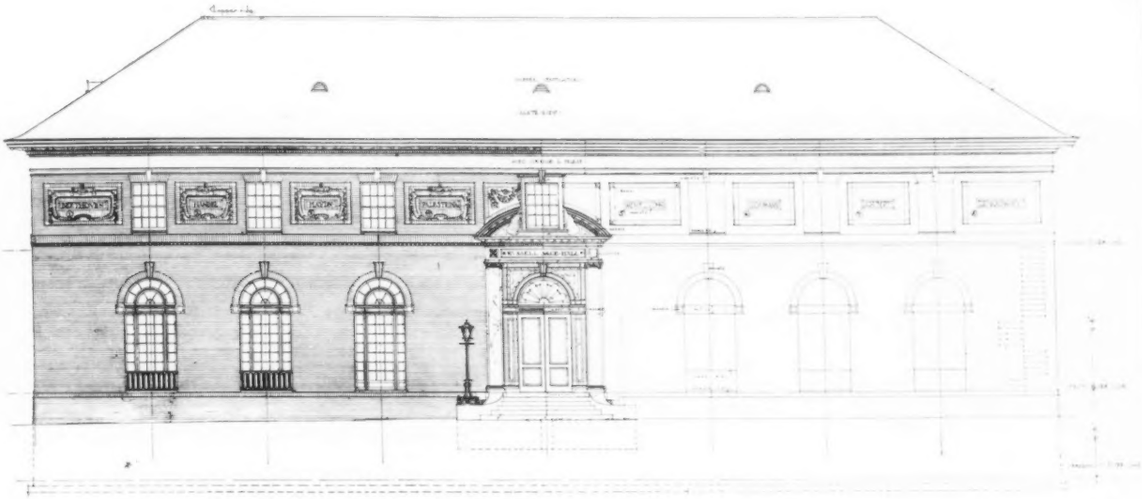
HOUSE AT DOVER, MASS.
JAMES PURDON, ARCHITECT.

HOUSE AT DOVER, MASS.
JAMES PURDON, ARCHITECT.

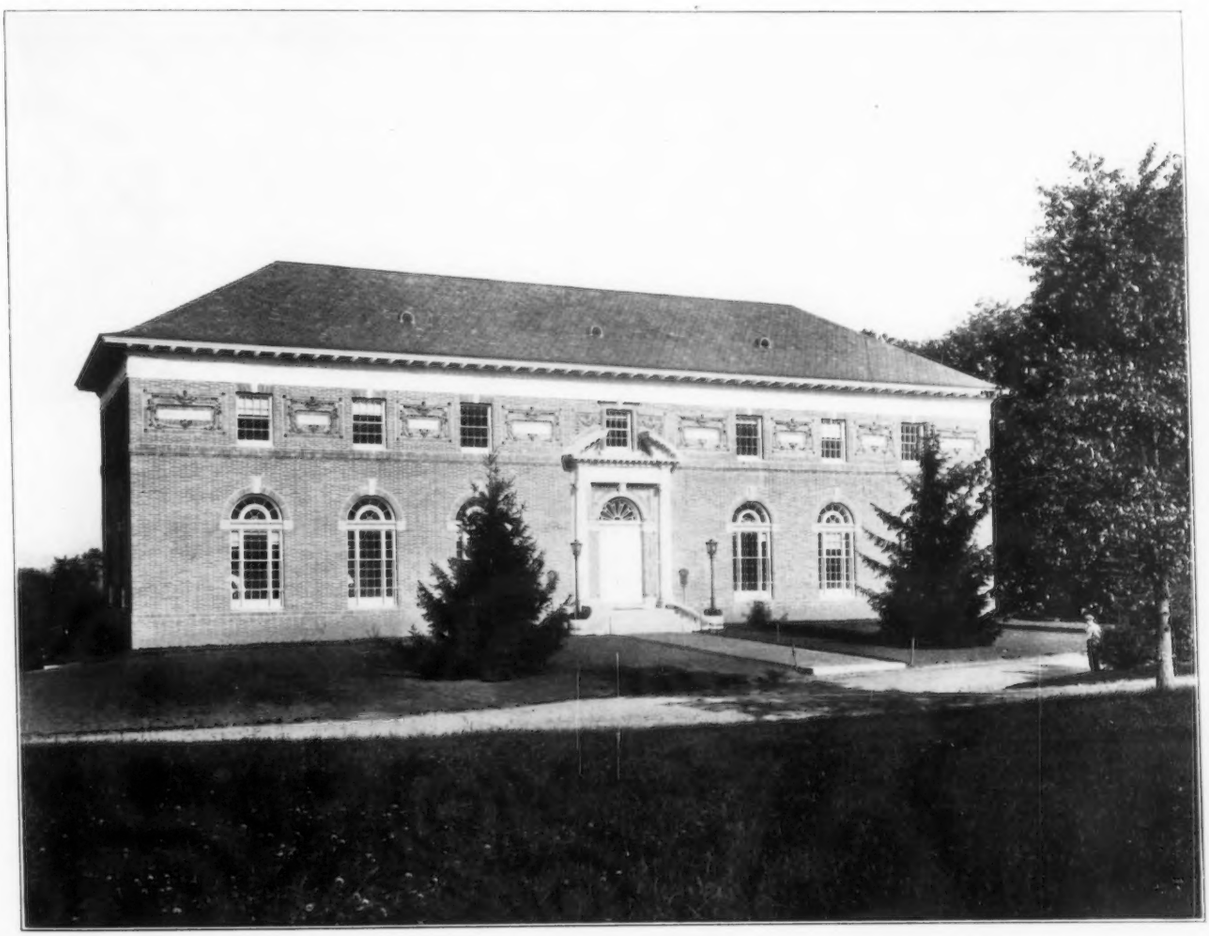
LIVING ROOM.



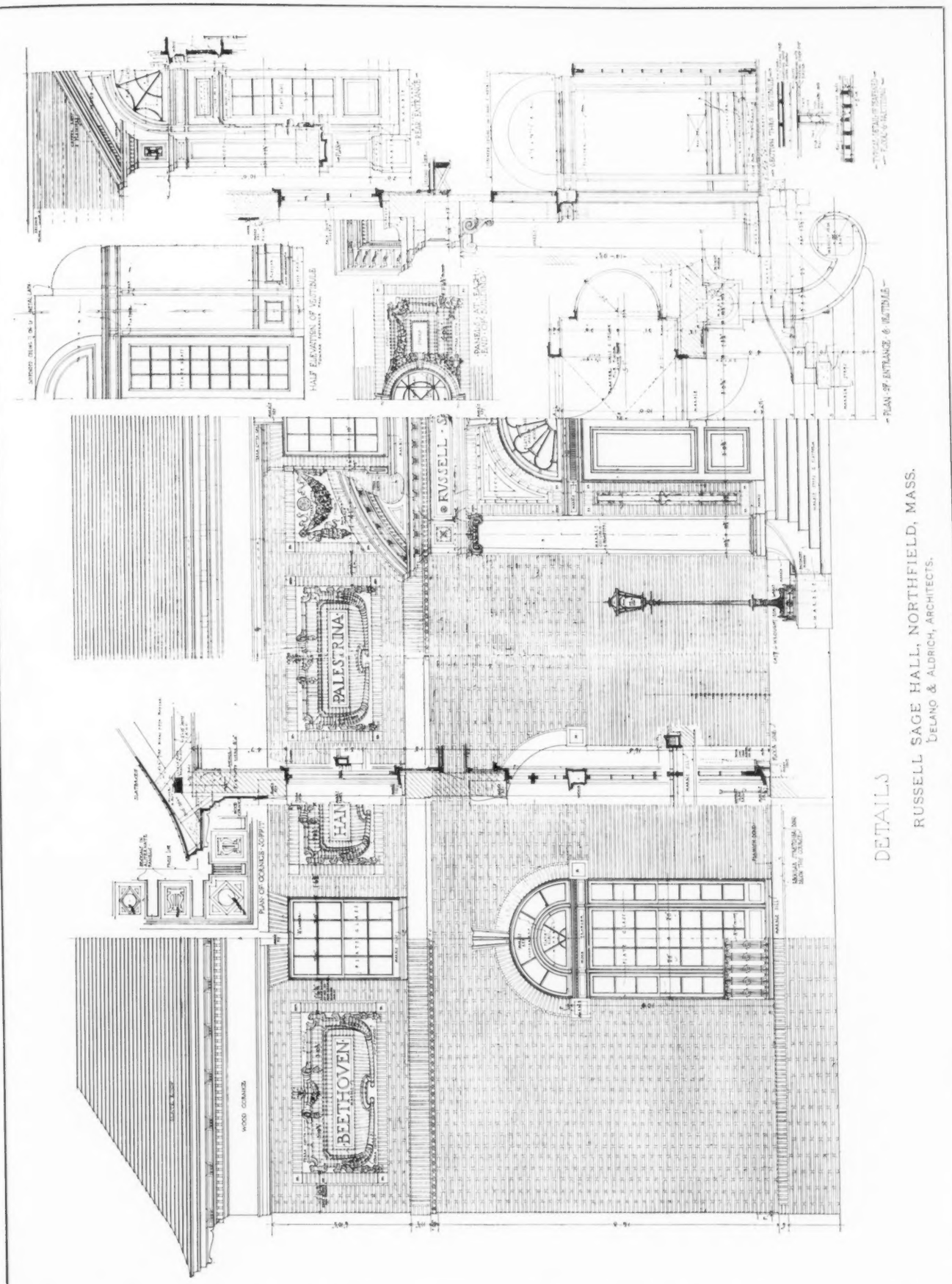
SUN PARLOR.



FRONT ELEVATION



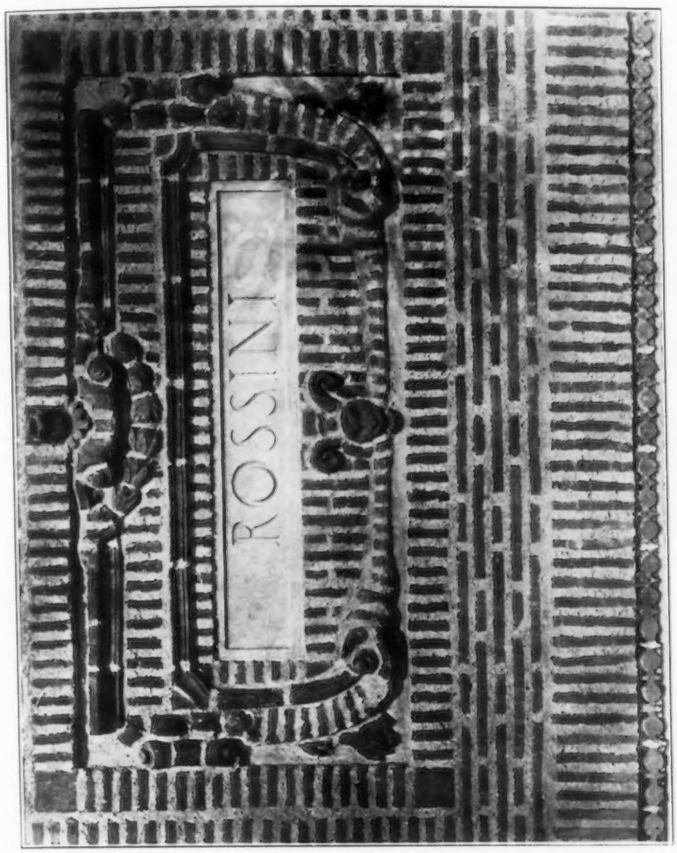
RUSSELL SAGE HALL, NORTHFIELD, MASS.
DELANO & ALDRICH, ARCHITECTS.

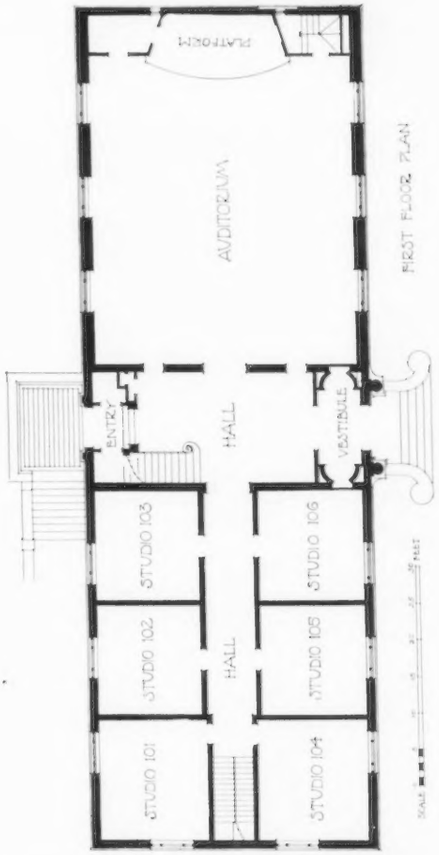


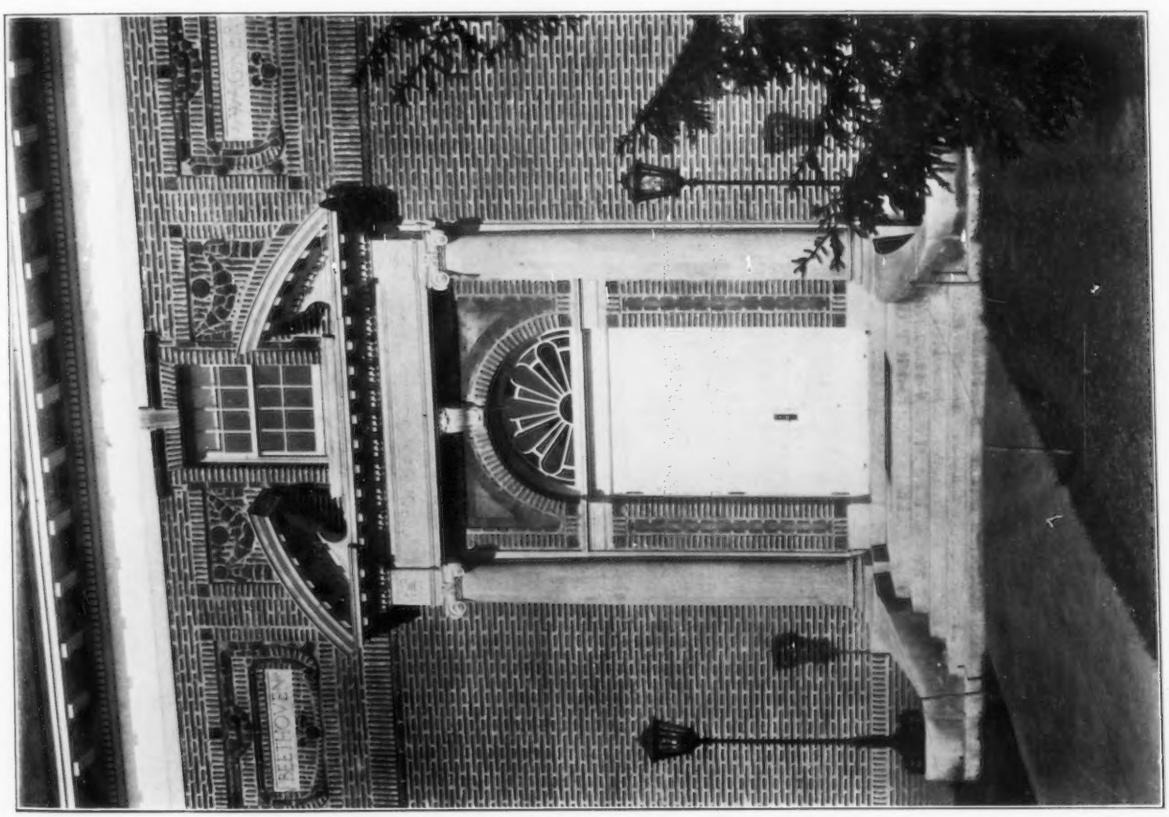
DETAILS

RUSSELL SAGE HALL, NORTHFIELD, MASS.

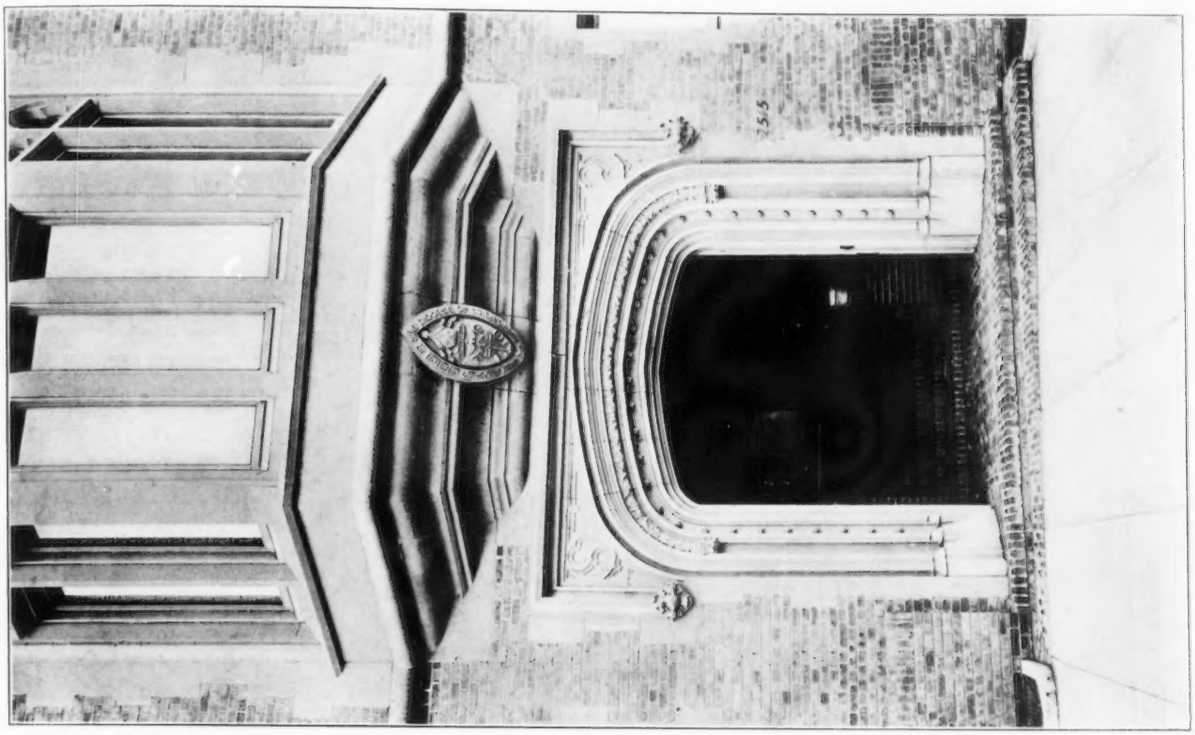
LELAND & ALDRICH, ARCHITECTS.

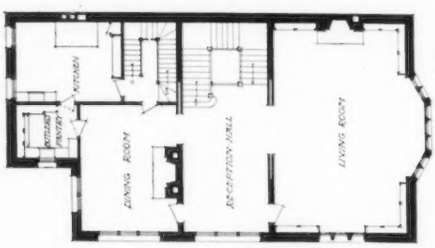






RUSSELL SAGE HALL, NORTHFIELD, MASS.
DELANO & ALDRICH, ARCHITECTS.

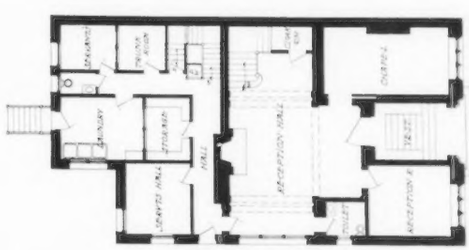




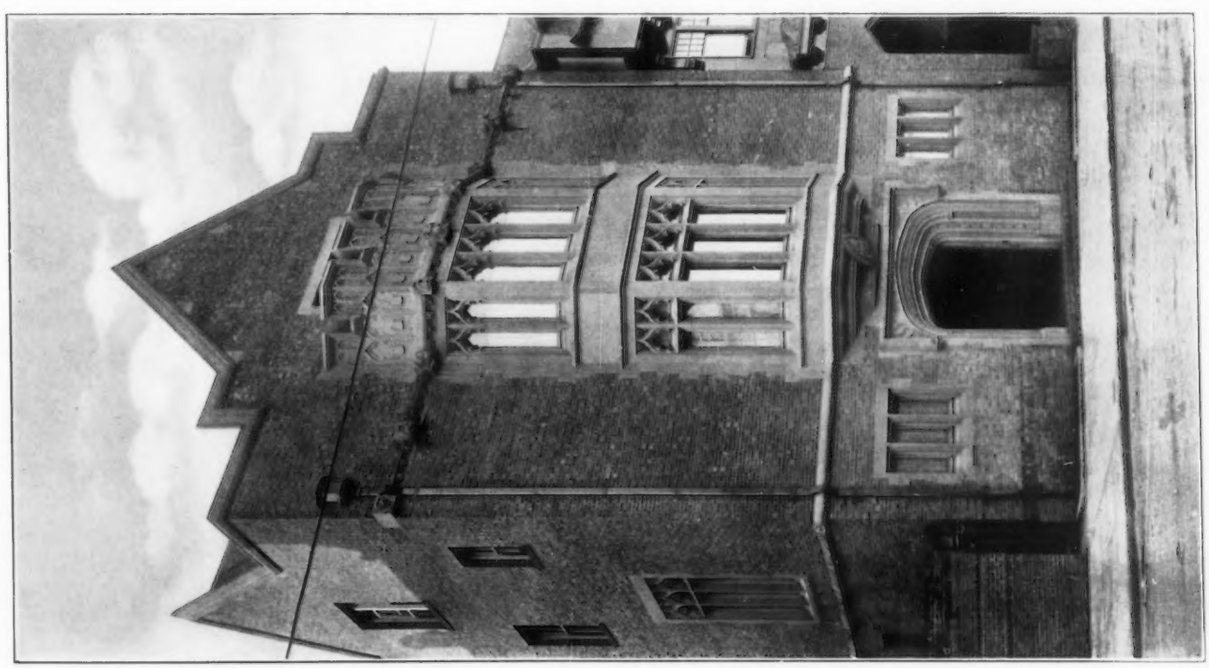
First Floor Plan.

HOUSE FOR THE PROTESTANT EPISCOPAL BISHOP OF CALIFORNIA, SAN FRANCISCO.

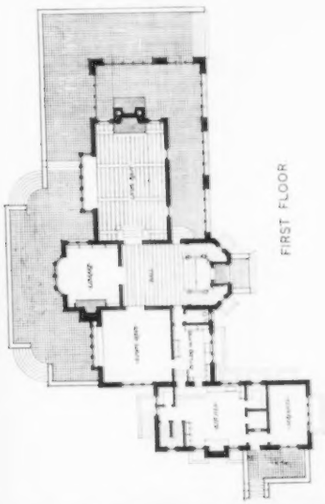
BLISS & FAVILLE, ARCHITECTS.



Entrance Floor Plan.

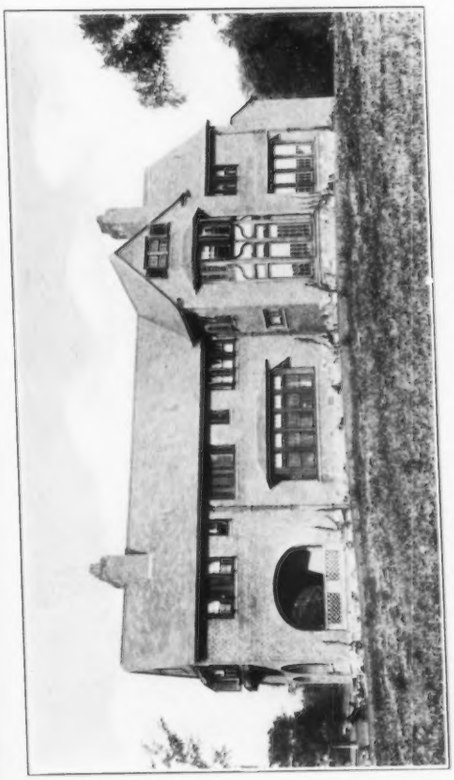


UNIV OF MICH



FIRST FLOOR

ROBINS & OAKMAN, ARCHITECTS.



SECOND FLOOR.

HOUSE
AT
WILLIAMSTOWN, MASS.

through which is pushed from the back a pin long enough to have ample rest on the inside face of the soffit panel.

The crown moulding is then set and anchored, as shown, after which the hollow brick bed for the wash courses is laid and the wash courses cemented, completing a cornice which is characteristic of terra cotta, being very light in weight and properly jointed so as to be adjustable to its steel support.

Plate XI. shows a slightly different cornice with less of steel supports. This method of support is in universal practice for the ordinary cornice of about three feet projection, and consists of outlookers formed by two angle irons placed back to back, with an inch space between to allow room for anchor bolt, and located over every modillion. The back end of the outlookers is held down by a continuous channel iron, bricked in and bolted down every 6 feet. By this means the location of the outlookers may be adjusted to suit the terra cotta.

The modillions are supported in the same way as were those shown in Plate X. The dentil course is anchored with ordinary strap anchors. The chenneaux has dowel pins in the center of each piece and the top of the brick bed of the cornice is covered with copper, forming a gutter, the edge of which is flashed in the joint between the crown mould and the chenneaux.

Raised joints are used on both cornices as these are preferable to covered joints, being made wide so as not to interfere with the cutting of such joints as may be necessary.

Covered joints are apt to be broken off before the work is finally set and it is difficult to get a tight mortar joint where covered joints are used because the cover interferes with pointing up.

Finally terra cotta is a ceramic material as distinct from stone as it is from wood, therefore it has an individual character which gives it a value of its own and consequently it should not be used merely as an imitation of something else, but designed so as to display all of its special characteristics of color, form, and texture.

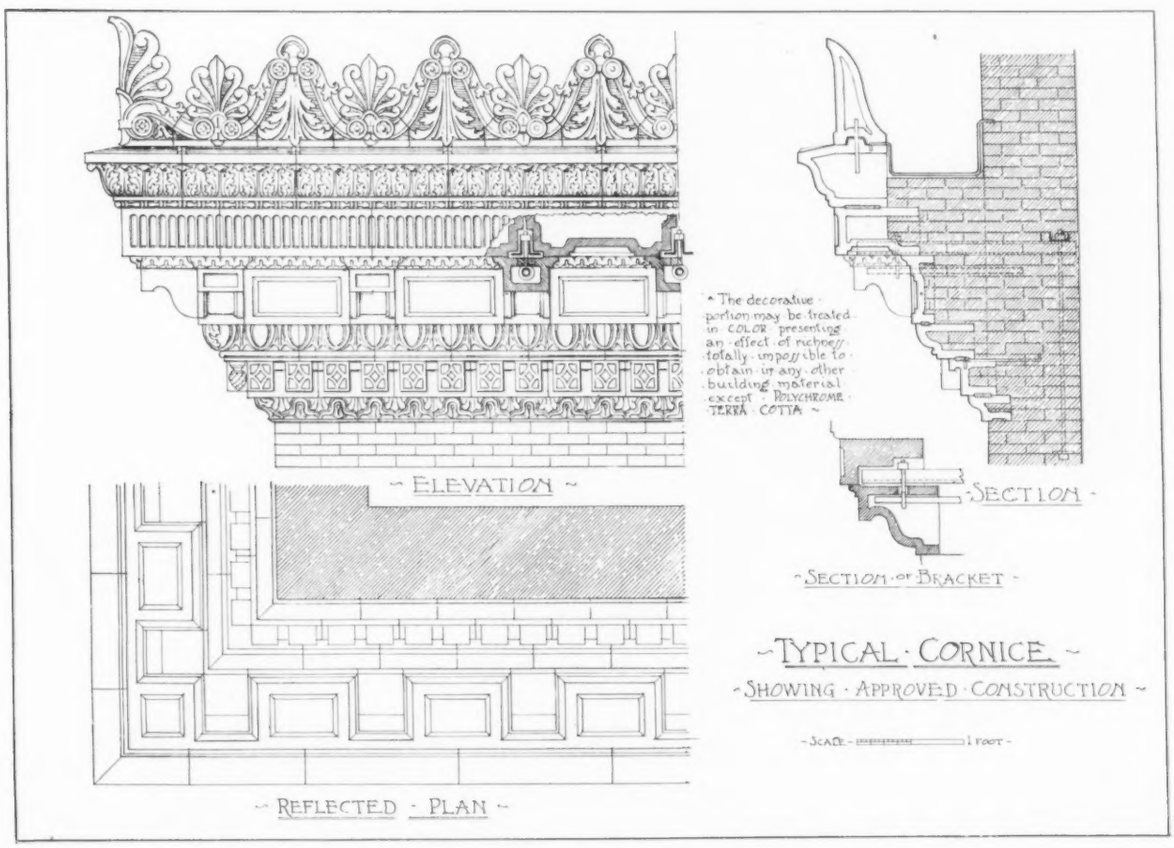

ELEVATION
REFLECTED PLAN
* The decorative portion may be treated in COLOR presenting an effect of richness totally impossible to obtain in any other building material except POLYCHROME TERRA COTTA
SECTION
SECTION OF BRACKET
TYPICAL CORNICE
SHOWING APPROVED CONSTRUCTION
SCALE 1 FOOT

PLATE XI.

Much of our recent work, and also many of the designs submitted in THE BRICKBUILDER'S Theater Competition of last year, demonstrate that when architects understand the character of terra cotta it can be used to produce works of art of a very high grade.

A new era in terra cotta is opening before us which may result in a new era in architecture because the American architect is looking for opportunities for original conceptions and as the possibilities of original treatment of wood or stone are practically exhausted and of metal nearly so, he may find that terra cotta is the one and only material having possibilities of novel treatment producing beautiful effects thoroughly consistent with the highest type of his art.

Composite Hollow Tile

AND REINFORCED CONCRETE FLOOR SLABS—A SUBSTITUTE FOR PLAIN REINFORCED CONCRETE.

BY GEORGE S. DREW, JR.*

IN ITS simplest form a floor slab of reinforced concrete consists of a comparatively thin mass of concrete spanning from one wall or support to another, and having steel in some form, usually rods, plain or deformed, incorporated in its lower surface as at "A" in the accompanying diagram, Plate I. In such a slab only that portion of the concrete located above the "Neutral Axis" (b) can be said to actively resist compression, and in ordinary practice this constitutes about twenty-five per cent of the entire mass. Of the remaining portion only a small part, possibly another twenty-five per cent directly above and surrounding the reinforced rods, is subjected to a secondary activity in transmitting the tension stresses to the reinforcing steel. It is therefore obvious that fully one half of such a slab is composed of inert material doing no work and practically doubling the dead weight of an ideally constructed floor of the same strength.

In order to save this waste of material and reduce the excessive dead weight of such structures, many devices and expedients, all purely mechanical, have been resorted to.

The most obvious expedient for the reduction of the dead weight is to reduce the thickness of the slab, and in most of the systems now in use this is accomplished by a variety of methods whereby the length of the span of the reinforced slab is shortened, most of them involving the use of either steel or reinforced concrete beams spaced at varying intervals, as the main carrying system, somewhat as illustrated at "A" and "B" in Plate II. These devices are all more or less open to the criticism that while the slabs are as thin as possible, they are still plain slabs and open to all the economic objections set forth above; that the centering is complicated and its cost increased by the use of concrete beams, and that if steel beams are used, their greater cost must be added and means taken to protect them from fire. Then again in either case in order to secure flat ceilings it is necessary to resort to some form of metal furring on steel members attached to the lower chords of the floor beams, adding greatly to the constructive cost.

Perhaps the simplest and most efficient method of overcoming these difficulties yet devised is the use of ordinary hollow terra cotta partition blocks in conjunction with reinforced concrete in the manner illustrated in Plate III.

In this system the hollow tile blocks are set end to end in continuous rows across the space to be spanned, the rows separated from 3 to 5 inches from each other and the edges of the tile supported on a simple centering of loose planks. The reinforcing steel is then placed in the spaces between the rows of tile and the interstices filled with concrete, which is also spread over the top of the tiles to the required depth to bring the neutral axis of this composite slab practically coincident with the upper surface of the tile and giving in reality a series of T-shaped reinforced concrete beams.

A comparison of Plate I. with Plate III., the two being drawn to the same scale, illustrates clearly the comparative advantages of the latter over the former type of construction.

The combined area of the tile and concrete in the one instance is only .55% of the area of the concrete in the other, with an equivalent saving in weight. This approximates ideal conditions very closely by the almost complete elimination of the inert concrete of the simple slab, replacing it with the hollow tile. The area of concrete in compression, i. e., that above the plane of the neutral axis, need not be diminished and enough concrete is retained between the tiles to fully develop the tensile strength of a steel rod of sufficient area to balance the resistance to compression exerted by the concrete above the tile. Furthermore, this system beyond the saving in dead weight over a plain slab of equal strength affords a flat ceiling surface

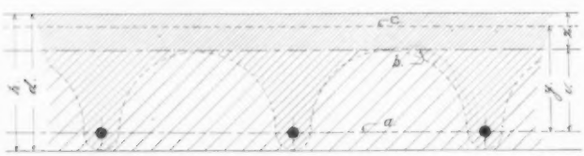


PLATE I.

TYPICAL SECTION OF A REINFORCED CONCRETE SLAB.

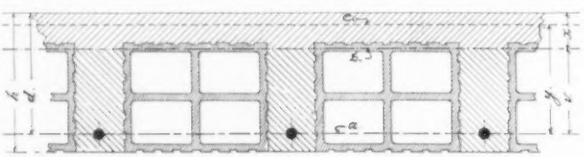


PLATE III.

TYPICAL SECTION OF A COMPOSITE REINFORCED SLAB.

a. Plane of Reinforcement or of Tensile Stress. *b*. Plane of Neutral Axis. *c*. Plane of Mean Compressive Stress. *d*. Effective Depth of Slab. (1.)
r. Distance from Neutral Axis to Plane of Maximum Compressive Stress. (.3d) *v*. Distance from Neutral Axis to Plane of Tensile Stress. (.7d)
y. Distance from Plane of Mean Compressive Stress to Plane of Tensile Stress. (.9d)

PLATE II.

TYPICAL FORMS OF FLOOR CONSTRUCTION.

* Head of Architectural Department, Westinghouse Church Kerr & Co., New York.

ready to receive the plaster without resorting to furring or other costly expedients.

A practical demonstration of these and other advantages inherent in this system of construction was recently afforded the writer in the erection of the Hotel Nassau, at Long Beach, L. I.

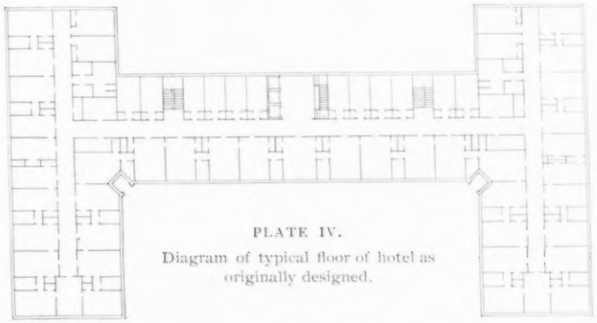


PLATE IV.
Diagram of typical floor of hotel as originally designed.

When on the 11th day of November, 1908, the Nassau Hotel Company placed the work of erecting and equipping this hotel in the hands of Westinghouse Church Kerr & Co., two factors, those of speed and economy, were even more than usually accentuated in the problem presented. At that time the plans for the building above the foundations, which had already been built, had not been completely developed, and so many m difications of the original conception were required by the owners that it fell to the writer's lot as architect for the constructing engineers to practically recast the entire conception both as to plan and method of construction, so far as the limitations imposed by the foundations and retention of some of the more essential features of the exterior treatment would permit.

HOTEL NASSAU.
View from boardwalk looking west.

As originally projected, the building consisted of an H-shaped structure 260 feet long by 140 feet wide, six stories and basement in height, and containing two hundred and forty-three guest rooms, eighty-three private baths, and two servants' dormitories, in addition to the public rooms and the various service departments. The southerly courtyard formed by the wings of the H was entirely covered by a two-story structure containing eleven shops fronting on the boardwalk, the roof forming an open terrace overlooking the ocean and the promenade. The wings of the building were approximately 50 feet in width, containing a central corridor with rooms on either side. The entire area covered amounted to nearly 32,000 square feet, and the total volume of the projected building to slightly more than 2,000,000 cubic feet. A diagram illustrating the arrangement of a typical floor is given in Plate IV.

In order to complete the building in the one hundred and eighty-three possible working days between the signing of the contract and the 19th of June, 1909, the day set for the opening of the hotel to the public, and at the same time observe the utmost economy in construction, required a most careful and thorough study and selection of both the materials and methods to be employed.

The plans for the structural steel which had been elaborately worked out contemplated the use of Bethlehem sections throughout, and these, it was at once found, could not be delivered early enough to permit of the completion of the building within the specified time. The substitution of standard shapes meant an increase of about twenty per cent in the tonnage and a corresponding increase in cost which both the owners and the engineers were loath to contemplate. It was at this point that a systematic study of the proposed floor construction was undertaken with a view to securing greater economy, with the following results:

The typical floor construction as originally designed consisted of 12 inch 36 pound I-beams, 8 feet apart on 20 foot spans, carried by two lines of girders and columns coincident with the corridor partitions. A diagram illustrating this framing is given in Plate V. Between these floor beams and flush with their upper flanges were 4½ inch reinforced concrete slabs supported on the lower flanges by concrete haunches. Below the beams were suspended the metal lath and furring for the plastered ceiling, substantially as shown at "A," Plate II., while above the beams was 2 inches of granolithic finish flush with the carpet nailing strips. The analysis of weights and costs for this construction was as follows:

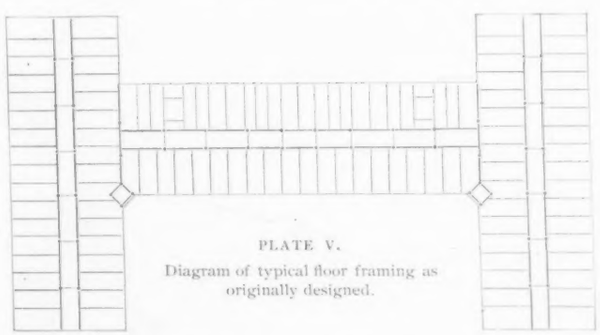


PLATE V.
Diagram of typical floor framing as originally designed.

	Weights.	Costs.
Steel floor beams	5 lbs. per. sq. ft.	$ .13 per sq. ft.
2 in. granolithic finish	25 " "	.08 " "
4½ in. reinforced concrete slab and haunches	60 " "	.34 " "
Hung ceiling plastered (3 coats)	10 " "	.10 " "
Total	100 " "	$ .65 " "

Calculation showed that by the use of 12 inch hollow tile blocks with 4 inch ribs of reinforced concrete, it would be possible to span directly from the walls to the girders, eliminating the entire system of floor framing. A comparative analysis of the weights and costs by this system resulted as follows:

	Weights.	Costs.
2 in. granolithic finish	25 lbs. per sq. ft.	$ .08 per sq. ft.
12 in. tile and reinforced concrete	68 ,, ,,	.37 ,, ,,
Plastered ceiling (two coats)	7 ,, ,,	.05 ,, ,,
Total	90 ,, ,,	$ .50 ,, ,,

It will be seen that the depth required for construction in both cases was the same, viz: 15 inches; that the dead weight was slightly in favor of the long span construction, thereby making it possible to use the same amount of steel in girders and columns for either construction, and that the estimated cost was 15 cents per square foot of floor in favor of the hollow tile and reinforced concrete. Another consideration which led to the adoption of this method of construction was the additional stability given the exterior bearing walls by the practically monolithic plate built in at every story and the equal distribution of the floor loads, permitting a substantial reduction in the thickness of the lower wall sections and a corresponding further economy. The experience of the field force during erection was found to fully justify the wisdom of this decision.

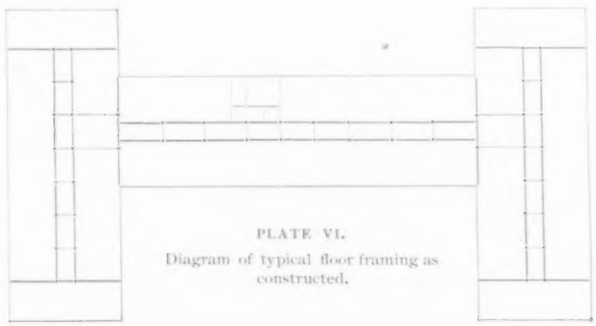


PLATE VI.
Diagram of typical floor framing as constructed.

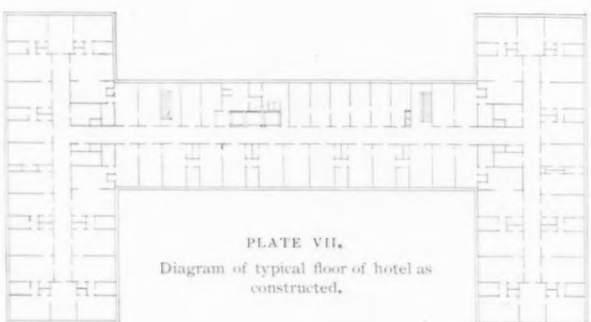


PLATE VII.
Diagram of typical floor of hotel as constructed.

On December 15th, thirty-four days after signing the contract, the erection of steel from this simplified design, illustrated in Plate VI. (involving less than one half the original tonnage), was begun and was pushed steadily on to completion. It was found that the costs both of handling the tile and erecting the centering were below those estimated and that this part of the work could be pushed with even greater celerity than had been supposed, it having been found quite possible to center and lay an entire floor containing 22,000 square feet in two days, quite as fast as the masons could carry up the walls to receive the floors.

Another advantage attending the use of this form of construction was the facility with which plumbing and other pipes and ducts could be incorporated and concealed in the floor construction by simply leaving out or breaking out a row of tile without impairing the sufficiency of the structure.

In designing these floors they were calculated to carry safely a live working load of 80 pounds per square foot without the aid of the 2 inch finish which was not applied till after the partitions were set and tests on various portions of the floors failed to produce a deflection of more than $\frac{5}{16}$ of an inch at four times this load.

To the unusual flexibility of design arising from the adoption of this type of construction was largely due our ability to meet the changes and additions exacted during construction by the growing requirements of the owners and lessees, which resulted in a much more elaborate and efficient equipment than was at first desired.

As completed, the hotel proper contains two hundred and ninety guest rooms, one hundred private baths, sixty-two servants' sleeping rooms, two servants' dormitories, a roof garden, and a greatly elaborated service equipment. The typical floor plan of the hotel as erected is diagrammed in Plate VII., and a fairly accurate idea of the proportions and size of the building is given by the accompanying illustrations. The three-story annex erected to the south of and adjoining the hotel proper contains in addition to the power plant and main kitchen a large dining room and thirty servants' sleeping rooms.

The café, café kitchen, and the bar were opened to the public on Saturday, May 29th, and the remainder of the buildings, with the exception of the roof garden which was not finished till July 15th, on Saturday, June 19, 1909, no inconsiderable achievement when the location, transportation facilities, and the weather conditions prevailing through the most inclement season of the year are taken into account.

HOTEL NASSAU.
General view from the beach

Specifications for Office Buildings.

BY FREDERICK W. WINTERBURN.*

THE secret of writing a good specification, if there is any secret about it, is intimate knowledge and infinite care, with concentration of thought upon every detail and requirement of the building in hand until one can see it in his mind's eye, complete in every respect. It is also not enough that one shall thus discern it but he must also describe it in terms that will be understood by all concerned in the construction.

Specifications should be confined strictly to describing what it is impractical to show on the drawings. This brings the specification within its legitimate compass, i.e , specific instructions. They should be pertinent, concise, and positive. The writer should know what is wanted and state it clearly. He should have an intimate knowledge of the requirements of the building, the cost, kinds and qualities of materials, as well as the quantities that will be required and whether procurable in order that they may be had on time and in quantity.

When the best material obtainable is called for or when a less costly grade will do, the author must be familiar with the vernacular of the several trades that enter into the construction, in order that the mechanics may understand him. It is especially important that he be familiar with the traditions of the trades and the workmen and, as far as may be, the rules of the trade unions, so that disputes may be avoided, for such a contention between unions delays the building just as surely as a strike.

A general knowledge of the law in relation to building is required — not alone the local building laws, but the common or general law as well. Rights of owners, contractors, workmen, tenants, adjoining premises, and other legal questions are likely to arise, as well as what the courts have generally enforced, and what they will not, for strange as it may seem the general specifications of to-day contain clause after clause that it would be impossible to enforce by law.

The architect must remember that he stands between client and contractor ; that each will read and interpret from his own point of view. General clauses will mean but little to the contractor, but to the owner they will loom large and beget great expectations that will later lead to disappointment. It is of little use to give an elaborate description, say of all locks, and then fail to state what doors shall be provided with them. The young architect should guard against elaborate general clauses ; he should be specific, mandatory, finishing if possible by a general clincher which will take care of all overlooked items.

Care must be taken to not say too much, for many a clause has been nullified by having too many words. Take this instance. "The contractor shall cut off smoothly, all mason and brick work from adjoining buildings that project over the property lines." In this case a concrete wall had to be trimmed and iron beams cut off, for which the contractor claimed an extra on the plea that concrete was not masonry in trade parlance and iron beams were neither masonry nor brick work. It will be seen at a glance that a stroke of the pen through the words "mason and brick" would have cured the defect. The better way would have been to make the clause more concise and say, "Cut off all projections." That would have been specific, inclusive, and shut off all argument as to interpretation of what was called for. This the architect must constantly bear in mind and carefully scan his clauses to see that while all things necessary are included he has not gone beyond the safety line and added confusion that will not fail to plague and vex him in the near future.

Another fault should be avoided ; having generally included certain work in a specific clause do not go on and partially specialize. For instance, "All walls and ceilings throughout shall be plastered three coats," and then go on to say that "basement ceilings shall be plastered." In this case the contractor does not plaster the basement walls, claiming that basement ceiling only was called for. He wants extra for basement walls, as he did not figure for them. You can see his contention is sound. If you had stopped with the simple first clause, it would have included every wall and ceiling and shut off all controversy and the dreaded extra.

Another vexation is the guarantee. If you want the contractor to build a waterproof cellar and guarantee it free of expense to the owner for a set term of months or years, say so, and then stop right there. If you go on and carefully particularize manner and materials he shall use, he will carefully follow your instructions. When the cellar leaks, you order him to make good, but he claims that the work is as per specifications and his responsibility ceased when he did what was called for. The owner following your advice refuses to pay. The contractor then sues and much to your surprise and the owner's disgust, wins his case. This at first glance seems unfair and unjust, but when carefully considered we find the courts are right. You cannot enforce a penalty for a failure of results and at the same time compel a specific performance of the work as it should be done in your judgment. If you are an expert you must assume the responsibility. If you shift the responsibility upon the contractor then you must stand aside, for he now assumes the responsibility, relying on his own judgment as an expert as to what is required to attain the result called for.

Many attempts have been made to prepare a set of skeleton specifications that could be filled out to suit different buildings, and the writer himself has spent much time in preparing them for use in the office, but the results were unsatisfactory and a second lot never was printed. The general clauses to our specifications however have been in use for many years. We have edited them from time to time, adding and cutting out, always striving for simplicity and directness. In practice we have found them equal to every occasion and have many times seen them copied in specifications of other architects, even including the errors which we had weeded out later.

The following fourteen clauses are generally necessary

* Of the firm of Clinton & Russell, architects, New York City.

for all classes of buildings. They are for the "Masons' Specifications," and the same are used for all other contractors with slight modification.

DRAWINGS AND SPECIFICATIONS. The drawings and specifications shall be carried out to the letter, and are intended to cooperate, i.e., anything shown on the drawings and not mentioned in these specifications, or vice versa, shall be done the same as if both specified and shown.

Figured dimensions shall govern over scale measurements.

Variations from the plans or specifications shall not be made without written authority from the architects covering every instance.

Wherever the words, "this contractor" appear in the specification, they shall designate the contractor for the work under the specification.

If this contractor observes errors or inconsistencies in the drawings or specifications, he shall without delay notify the architects that proper adjustment be made.

MEASUREMENTS. This contractor shall verify at the building all measurements relating to his work and shall adjust the joining and fitting of his work to the other works. When building is up to curb level, this contractor shall employ a city surveyor to verify the walls and certify that they do not trespass on adjoining property or streets.

PERMITS. Building permit will be obtained by the architects. Vault permit, if required, by the owner. Water permit and all other permits and privileges necessary for the prosecution of the work herein specified, shall be obtained and paid for by this contractor.

WATCHMAN. The building will be considered as in charge of this contractor, and he shall keep a watchman on the premises continuously from the time work is turned over by the excavating contractor, until building is completed and delivered over to the owner.

RESPONSIBILITY. This contractor shall make his work conform to the law, to the City Ordinances, and to the requirements of the Superintendent of Buildings.

This contractor shall be responsible for all loss or damage to life, limb, or property that may happen through any operations under his charge; and shall hold the owner harmless against all loss or damage from such cause or causes.

This contractor shall guard all dangerous places by suitable railings, danger lights, etc., as required by the law and the police regulations, or as directed by the architects.

ADMINISTRATION. This contractor shall give the work personal supervision and keep a competent superintendent in charge on the building during the progress of the work. He shall supply a sufficient number of strong ladders, firmly braced, and maintain access to all parts of construction.

He shall maintain a sufficient number of steam or electric power hoists to elevate required materials for the rapid progress of his work.

He shall maintain an office, with telephone connection on the premises; this office shall have in conjunction with his own accommodations, a table for plans and a drawer with lock, for the use of the architects.

This contractor shall co-operate with the other contractors on the several works, so that work will be prosecuted in proper sequence and will not have to be taken down to allow the construction of work that should have had precedence.

The permanent elevator wells shall be left free and no one will be allowed to use them except the contractors for elevator work.

EXTRA WORK. No work shall be considered as extra, unless same is done under a written order from the architects, said order stating the amount or manner of compensation.

DEFECTS. This contractor shall make good any defective materials or workmanship which may occur in his work within twelve (12) months after the completion of this contract, and the issuance of the final certificate by the architects shall in no way exempt this contractor from the obligation of remedying and correcting defects within the twelve months aforesaid.

CUTTING AND PATCHING. This contractor shall do all required cutting of his work for other trades and shall do all patching and repairing of his part of the work after them, that may be necessary. He shall leave all his work sound, clean, and perfect at completion of the building.

RUBBISH REMOVAL. During construction and up to full completion of the building, this contractor shall clean up and remove all rubbish whatsoever resulting from his own part of the work, or from the work of all other contractors; he shall keep the building broom clean and shall not let rubbish or waste materials accumulate on the premises or streets, removing same whenever directed by the architects.

MATERIALS, ETC. This contractor shall furnish sufficient labor, materials, plant, tools, scaffolding, and appliances whatsoever necessary for the complete carrying out of his work as herein set forth. Where not specifically called for, all materials shall be of the best kind and quality suitable for the work.

Workmanship shall be the best.

WATER IN CELLAR. This contractor shall keep the excavations or cellar free of water, emptying same whenever called upon to do so by the architects.

BRIDGE. Build a strong bridge over all sidewalks. This bridge to have a roof strong enough for the stone masons to set their work from. It shall be kept in repair during the progress of the building and removed when ordered by the architects.

OLD CISTERNS, TRIMMING, ETC. Fill in with concrete and masonry any old cisterns or wells that may be discovered on the premises. Cut and trim off smoothly any projections found on adjoining walls, so that walls may be carried up plumb and close to lot line from the bottom.

As specifications invariably have to be prepared in a hurry, it will be found a great convenience as well as a saving of time to write the specifications over a former one. Extra copies of all specifications are written and filed away. Then when one has to be prepared, a copy is selected as close to the type as possible and used as a form, from which, by cutting out, interlining and substituting new clauses with desired additions, copies for the typewriters can be prepared very quickly. These will require very careful attention in correcting.

Care should be taken of all instances where clauses are

found to be defective during construction, also of wording that allows different interpretation, or is easily misconstrued. Note all useless clauses, mistakes, omissions, and blunders. The same error should never be tolerated again.

It is better practice to group the different trades in separate specifications around the general contractors specifications, which always include all mason work. This is a help, both to the general contractor, as it allows him to hold the subcontractors down to strict performance of the work, as well as the contractors themselves, who may know definitely what they are estimating on. Such a course entails great care on the architect's part to see that no discrepancies occur between the different trades, and again the warning comes not to depend on general clauses to cure this. The better way is to be exact, make all the points meet. The more definite and plain the drawings and specifications are made, the closer the estimates will run.

It is best to have lists of all work in every trade, by means of which omissions can be checked off and everything necessary to a perfect building be included. It lowers the dignity of the architect to offer an excuse to the owner because certain improvements have not been provided, and the best of clients usually receives the assurance somewhat skeptically, "that as they were not included they were not figured for, therefore he can have them if he so desires." It is well to have everything included and ask the client if he desires ice water for tenants, thermostats, vacuum cleaning, etc., all down the list, and let him do the weeding out. It gives him a higher appreciation of your ability.

In conclusion, we would emphasize the point that the specifications are never greater than the man who writes them. They must be evolved, not copied, and written by one who possesses an intimate knowledge on such matters and who combines in himself the qualities of carefulness, keenness, and patience.

Plate Illustrations—Description.

Town Hall, Clinton, Mass. The building is situated at the corner of two principal streets and faces a large park. The heavy foliage as well as the proximity of an old wooden church made the selection of color for the building an important item, while the character of the neighborhood influenced the scale. Buff brick in two tones has been used for the exterior together with trimmings of terra cotta shaded to match the lighter or body bricks. Five-eighths inch joints deeply ruled are used throughout together with considerable pattern brickwork. In the upper part of the tower three colors are introduced in glazed terra cotta. The roof is of red shingle tile. The Town Hall proper, which contains the customary offices, is connected by the main hall to the large auditorium, so planned as to be used either with the main building or separately. The auditorium is a special feature of the building, being provided with a stage, dressing rooms, supper room, etc., large enough to accommodate the social needs of the town as well as the town meeting. The color scheme is green and gold with an ivory tinted vaulted ceiling which is divided into panels and ornamented in low relief.

The Dining Hall at Mount Hermon Boys' School. The building is of Harvard brick with granite wall trimmings, wood cornice, and portico columns. The foundation walls are of concrete and have been surfaced back by hand with bush hammer to effect a harmonious treatment with the granite water table. The interior arrangement is T shaped in plan, formed by large dining hall in the center of the main building, 50 feet by 162 feet, and with large vestibules or anterooms at each end. The wing contains a kitchen, storage rooms, etc., on the main floor, and a bakery, servants' dining room, toilet, etc., in the basement. The main dining hall accommodates eight hundred persons and is of sufficient height to be in good proportion with the large dimensions in plan. The interior walls are faced with Harvard brick above a light gray impervious brick dado. The cost of the building, including the construction, kitchen apparatus, electric fixtures, etc., was $65,000. The size in cubic feet from the surface of the cellar floor to the roof surface is 576,000 cubic feet, amounting to 12 cents per cubic foot, exclusive of the architects' commission.

Town Building, Lenox, Mass. The building is constructed of water struck bricks and cement mortar with white marble trimmings. The cornice is of galvanized iron and the columns of wood with composition capitals. The cost of the building was approximately $40,000.

House at Dover, Mass. The house which is situated on one of the southerly slopes of Pegan Hill was originally planned for composite construction, i.e., brick walls with wood floors and partitions; but abundant sand and gravel being close at hand it was changed to a fireproof building. The general style is a modified French Renaissance, with walls of dark red brick, trimmings of cast white marble, composed of white cement, sand, and marble dust; and a roof of gray green slate. The terraces are laid in red cement in quarry tile effect, with the curbings, water table, steps, etc., in granolithic.

The interior is of a simple colonial style. Finished hard wood floors have been used throughout with the exception of the service portion of the house, which has been finished in cement with a red quarry tile effect, and in the bath and toilet rooms, which have white cement. The walls of the first floor rooms are largely panelled in wood, red ash being used for the living room, clear pine reaching to the ceiling and painted a pearl gray for the dining room, and black swamp cypress for the den. White cement panelling is used in the hall with white-wood fluted pilasters, beamed ceiling, and colonial staircase.

Russell Sage Hall, Northfield, Mass. The building follows the Colonial style in its outlines, while the detail of the brickwork in general is patterned after the Roman models. The architects of this building endeavored to produce a decorative effect through the medium of rich ornamentation, and at the same time preserve the general color scheme throughout. From a distance the building gives a reddish gray appearance which gradually changes, in approaching, to a pronounced brick treatment in colors that range from a light red to a deep purple. The panels containing the

names of musicians on white marble are highly ornamented, but are kept in perfect harmony with the rest of the building. The various models of the different panels were first made of plaster, upon which the brickwork was laid off. After this the plaster models were cut in pieces to serve as new models for the shapes of the various bricks. Rough cut mortar joints 1 inch in width were used for laying in Flemish bond the bricks, which are 18 inches by 1½ inches by 6 inches. The cost of the building was $44,000.

House for the Protestant Episcopal Bishop of California. The building is treated in a dark cherry brick, laid in gray joints, with the central oval window and other trimmings of gray sandstone. Upon the interior, the dining room is finished in cedar and white enamel, the reception hall in oak with caen stone mantle, and the living room in red wood with walls of deep red velour. The steps and walls of the vestibule are brick. Adjoining the reception hall is a small chapel which may be used for private ecclesiastical affairs, weddings, etc., and arranged so as to interfere in no way with the living portions of the residence. The attic floor plan consists of five chambers and two bathrooms. The entire cost of the building was $32,000 or about 20 cents per cubic foot.

House at Williamstown, Mass. The west front of the house, parallel to the street, is approached by a straight drive of 350 feet. A wide brick terrace extends from the house to the garden, making this side the main living quarters. The covered terraces are glazed in during the winter. The exterior walls, steps, terrace floor, sills, water table, balustrade, coping, etc., are of dark red local brick, laid in English bond. The roof is covered with red and green slate, while the woodwork is of pine stained a dark brown. In planning, the rooms of the main floor are connected by large openings while the floor levels follow the natural grades. The house is set on a slight eminence which makes the floor of the kitchen and living room slightly lower than the central portions, effecting a greater height to the living room. The woodwork in the library, in the stair hall, and in the living room, is of ash, wax finished, stained dull gray and brown. The house contains approximately 174,425 cubic feet. These figures are taken from the bottom of the footings to the top of roof rafters at a point midway between the eaves and the ridge. Steps and uncovered porches are not included. The cost of the house complete, including heating, plumbing, electric wiring and lighting fixtures, was 19 cents per cubic foot.

METROPOLITAN LIFE INSURANCE BUILDING AT SAN FRANCISCO.

The frieze of the main cornice, a detail of which is shown, was executed by the Rookwood Pottery Company in architectural faience. The background is of a soft blue with the reliefs in white, except the circle back of the "M," which is in a harmonious green.

N. Le Brun & Sons, Architects.

Editorial Comment and Miscellany.

THE New York *Times* of December 12th presented to its readers short personal interviews on all phases of American growth during the last century. The "Growth in Architecture" in America was treated by Thomas Hastings and William A. Boring, and "Architecture As It Was," by Oscar Fay Adams.

Mr. Hastings forcibly prefaced his remarks with this statement: "When you ask me what has happened in architecture in the last fifty years, I would say that one has only to think of the old North Washington Square houses and how different things are that have happened since their erection." Mr. Hastings continued his thought by denouncing the ever-present pessimists and claiming that never had architecture righted itself so quickly as our own after the setback some fifty years ago. He believes, however, that our archeological spirit of selecting all styles of the past is the greatest calamity that ever happened in the history of art, and attributes to all allied arts a desire for novelty rather than beauty. He thinks also that this archeological tendency has fathered the realism of our artists, which possesses little respect for traditions. But after commenting on the modern confusion of the last half century, Mr. Hastings remarks: "It seems to me, however, that in the last fifteen years there have been indications of very great promise coming from this chaotic condition of things, and this, I believe, is the outcome of a very remarkable advance in educational work." While he praises the healthy influence of the Beaux Arts, the colleges and educational ateliers, he condemns the practice of planning "ugly things" under the guise of their teachings.

Mr. Boring believes that the change in our architecture has kept pace with the changes in our manner of living and doing business. He refers to the business building of fifty years ago as a "lifeless shell," while to-day it is a system of muscle, nerve, and blood. He also shows how our needs have been adequately met as exemplified in the growth of practical Christianity, which has given us buildings for charitable and humanitarian purposes; in the rise of social activity, which has produced our theaters and playhouses; in the growth of education with its vast outlay in libraries and museums; and also in the rush to our cities with the immense plans for accommodating this ever-increasing mob. In closing Mr. Boring says: "If the present activity continues, with its accompanying public interest and growth of good taste, we may hope to have developed, before another half century rolls by, an American style of architecture which will express the national sentiment in buildings and meet the complex utilitarian requirements and yet exhibit the rare qualities of pure style and intrinsic beauty."

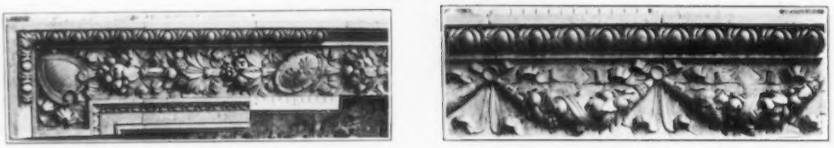
THE NEW BLACKSTONE HOTEL, MICHIGAN AVENUE, CHICAGO.
Architectural terra cotta made by the Northwestern Terra Cotta Company.
Marshall & Fox, Architects.

Mr. Adams in referring to the growth of American architecture says that "the dark ages of architecture in America were at their gloomiest in the year 1859." He portrays the decline of the Georgian style and the rapid growth of the so-called Italian villas, which in turn gave way to the "French-roofed" dwelling. Not only were the new buildings using the "French roof," but the older ones were remodeled to meet this new style. After this Mr. Adams pictures how the last half of the present century has brought about a complete revolution in the ideas of the people. Instead of the dull, commonplace design, the nation has awakened to a real appreciation of true art. To quote his words: "Stolidity has been superseded by a perception of beauty in architectural lines, and vigor and even audacity have taken the place of timidity. Ugliness

DETAIL BY NEVILLE & BAGGE, ARCHITECTS.
New York Architectural Terra Cotta Company, Makers.

is no longer admired as it once was, and beauty is no longer misconceived. It is not merely a change that has come to pass in architecture since 1859, it is a revolution that has been achieved."

WHAT is said to be the largest "fireproof home" building scheme yet undertaken is going forward at Orange, N. J. It represents an investment of about a quarter of a million dollars and consists of a colony of houses built entirely of terra cotta. Six thousand tons of the hollow blocks (or 500,000 square feet) have been shipped from the factories at Perth Amboy. Twelve houses have been started, and it is expected that within a year twenty-four will be finished. In the walls the blocks are laid end to end, giving continuous vertical air chambers. In the floors they are laid flat alternating with concrete beams. A street has been planned through the property and terminating in an ornamental square which will be used as a playground for children. Mann & MacNeille are the architects.



DETAILS, CLINTON TOWN HALL, CLINTON, MASS.
Executed in terra cotta by Atlantic Terra Cotta Company.
Peabody & Stearns, Architects.

ANOTHER New York apartment house of the co-operative type is nearing completion on Park avenue at the northeast corner of 61st street. It will be fifteen stories high and will represent an investment of more than $750,000. It is said to be the best of its type, both in construction and organization. The projectors of the building will occupy a large portion of it, and the remainder will be rented by a local real estate firm to tenants congenial to the owners. The floors are to be divided into three separate apartments. These apartments will be duplex, i.e., covering a part of two floors and as closely resembling a private dwelling as is possible under the circumstances.

A TRACT of twenty-two hundred acres in the Ramapo Mountains, between Suffern and Tuxedo, on the line of the Erie Railroad, is the basis of a unique plan in the development of real estate. The managers of the Erie Real Estate Company propose to develop the land on the lines of a model town, communistic in the sense in which all purchasers of building sites will play their part in the government of what is declared to be a co-operative colony. A fine railway station and a town hall are among the first buildings to be erected. The land lies at an altitude of 600 to 1,000 feet and is but one hour's ride from the Hudson Terminal buildings.

PANEL FOR HOSPITAL AT UNITED STATES NAVAL TRAINING STATION, NORTH CHICAGO.
American Terra Cotta & Ceramic Company, Makers.
Jarvis Hunt, Architect.

FOUR model six-story tenements for the special accommodation of tuberculosis sufferers are soon to be built on the upper East Side by William K. Vanderbilt in New York City. The cost, exclusive of sites, will be $650,000. The plans show roof gardens, open-air balconies, and other distinctive features. Only moderate rents will be charged, and skilled physicians will have supervision over the little colony.

IN GENERAL.

The Philadelphia Chapter of the A. I. A. gave their fortieth anniversary banquet on the evening of Saturday, December, 11th.

A memorial meeting in honor of the late Charles Follen McKim, was held in the auditorium of The New Theater, New York, on the afternoon of Tuesday, November 23d. There was a large attendance of architects, many of whom came from distant cities. Many men distinguished in the arts and sciences were also in attendance.

On the evening of November 24th, at the Hotel Brevoort, New York City, a dinner was given to Cass Gilbert, president of the American Institute of Architects, by the members of his staff, in honor of his fiftieth birthday. During the evening, made memorable by good fellowship, Mr. Gilbert was presented with a handsome bronze loving cup, as a token of remembrance and esteem. The dinner was presided over by J. R. Rockart. Short addresses were made by Mr. Gilbert and the following guests: W. R. Mead, Edward Blashfield, Walter Cook, D. C. French,

E. E. Garnsey, Prof. Warren P. Laird, and George D. Seymour.

A Charter has been granted to the Southern Pennsylvania Chapter of the American Institute of Architects. The granting of this Charter and the establishing of this Chapter, which is to cover several counties of Pennsylvania, with its headquarters at York, will be of far-reaching importance to the public and to the profession. It will mean a still further widening in this state of the scope and influence of the American Institute.

The Southern Pennsylvania Chapter was organized with the following officers: John Hall Rankin of Philadelphia, president; D. Knickerbacker Boyd of Philadelphia, vice-president; B. F. Willis of York, secretary; J. A. Dempwolf of York, treasurer.

DETAIL EXECUTED IN TERRA COTTA BY THE SOUTH AMBOY TERRA COTTA COMPANY.

The twenty-fifth annual exhibition of the Architectural League of New York will be held in the Building of the American Fine Arts Society, 215 West 57th street, from January 30th to February 19th. Last day for return of entry slips, December 27th. Last day for the reception of exhibits, January 14th. Exhibits discharged, February 21st. Further information may be had from Harvey Wiley Corbett, secretary of the exhibition committee, 215 West 57th street, New York.

CAPITAL EXECUTED IN TERRA COTTA BY THE NEW JERSEY TERRA COTTA COMPANY.
L. Berger & Co., Architects.

The National Association for the Study and Prevention of Tuberculosis, offices, 105 East 22d street, New York, has published a pamphlet entitled, "Some Plans and Suggestions for Housing Consumptives." Lack of space prevents a review which this work merits. The pamphlet was published for free distribution, and there can be no doubt that it will have a value for every architect who is interested in the subject.

The Phipps House, Trowbridge & Livingston, architects, was awarded the medal of honor for 1909 by the New York Chapter of the American Institute of Architects.

Charles U. Thrall, whose series of articles treating of "Terra Cotta: Its Character and Construction" is finished in this issue, is the superintendent of the Tottenville, Staten Island, plant of the Atlantic Terra Cotta Company.

Harry I. Goddard & Selby H. Kurfiss have formed a copartnership under the firm name of Kurfiss & Goddard. Their offices are at 1214 Scarritt Building, Kansas City, Missouri, at which address they solicit manufacturers' catalogues and samples.

Albert C. Kuball, of Cincinnati, formerly at 2101 Reading road, is now located in Suite 611, Lincoln Inn Court.

The exterior brick used for the Town Hall at Clinton, Mass., and for the Russell Sage Hall at Northfield, Mass., both buildings illustrated in this issue, was furnished by Fiske & Co., Inc.

Sayre & Fisher Co. furnished the brick for the exterior treatment of the houses at Villa Nova and Bryn Mawr, Pa., illustrated in this issue.

What is believed to have been the first presidential mansion in the United States is the old Van Altren House, which stood under one of the immense arches of the Brooklyn Bridge on Cherry Hill, New York City. It was to this house that President Washington returned after taking the oath of office, and there he resided from April 23, 1789, to Feb. 23, 1790. It is now being torn down to make room for a structure paying larger revenue.

DETAIL BY CROW, LEWIS & WICKENHOEFER, ARCHITECTS.
Made by Conkling-Armstrong Terra Cotta Company.

The terra cotta used in the Town Hall at Clinton, Mass., illustrated in this issue, was furnished by the Atlantic Terra Cotta Company.

WANTED — Architect with Paris training and experienced in country work, not having sufficient independent business, would like to make arrangement with New York firm of good standing. Address "L. M.," care The Brickbuilder.

ARCHITECTS AND DRAFTSMEN—I REGISTER ASSISTANTS FOR THE ARCHITECTURAL PROFESSION EXCLUSIVELY IN AND FOR ANY PART OF THE UNITED STATES. HAVE CALLS FOR HELP CONTINUALLY FROM THE BEST OF OFFICES IN ALL PARTS OF THE COUNTRY. MY LIST CONSISTS OF THE HIGHEST GRADE TECHNICAL MEN. NO REGISTRATION FEE AND REASONABLE TERMS. IF YOU ARE NEEDING HELP OR SEEKING A GOOD POSITION, WRITE ME. LEO A. PEREIRA, 218 La Salle St., Chicago. Long Distance Tel., Franklin 1328.

WANTED — High-class draftsman. Must be competent in designing and rendering. Address, stating experience and salary, Box 317, Albany, N. Y.

WANTED — Architectural draftsman. Must be thoroughly experienced. Give full particulars as to former employers, class of work done, salary, etc. — Albert Kahn, Detroit, Mich.

SPECIAL

COLONIAL ARCHITECTURE
IN
SOUTH CAROLINA and GEORGIA

By E. A. CRANE *and* E. E. SODERHOLTZ

52 plates, very finely reproduced in heliotypes, folio size (12½ x 16"), in portfolio

Exteriors, interiors, halls, mantels, doorways, staircases, furniture, details of decoration, etc. Illustrating some of the best and most interesting examples of American Colonial Work, many of which have now disappeared.

New edition, identical in size and *make-up* with the previous issues
$10.00 net

THE BRUNO HESSLING COMPANY
64 EAST 12TH STREET NEW YORK, N. Y.

LINOLEUM
SECURED BY CEMENT TO EITHER WOODEN OR CEMENT FLOORS

Ideal Floor Coverings for Public Buildings. Elastic, Noiseless, and practically indestructible. It is in use on Battleships, cemented to steel decks in the United States, English and German Navies; should be placed on floors under pressure, and best results can only be obtained by employing skilled workmen.

The quality of our work has passed the inspection of the United States Government and numerous Architects and Builders.

The Franklin Union Building in Boston, R. Clipston Sturgis, Architect, is a sample of our work, and we have contracts for the North Dakota, the largest Battleship in the United States Navy; the extensions of the Suffolk County Court House in Boston, George A. Clough, Architect; and the Registry of Deeds, Salem, Mass., C. H. Blackall, Architect.

We solicit inquiries and correspondence.

JOHN H. PRAY & SONS COMPANY
646-658 WASHINGTON STREET, Opp. Boylston Street
BOSTON : : : : : : : : : MASS.

COMPETITION FOR A PUBLIC BATH AND GYMNASIUM BUILDING.

FIRST PRIZE, $500. **SECOND PRIZE, $200.** **THIRD PRIZE, $100.**

COMPETITION CLOSES JANUARY 17, 1910.

PROGRAM.

THE problem is a Public Bath and Gymnasium Building. The location may be assumed in any American city of about 50,000 inhabitants, or some section in a larger city. Competitors may choose between two sites, one at the corner of two intersecting streets, or one in the middle of a block. Both lots are ample in size to accommodate the building and are practically level.

In plan the building may be rectangular (block); or of the pavilion type, having a central motive and two wings, with the longitudinal axis parallel to the street.

The plan should provide for the following: —

IF OF THE BLOCK TYPE: —

In the basement: a swimming pool, six showers, a suitable number of lockers, dressing rooms and benches, toilet rooms, supply rooms, a small laundry for washing and drying, heating plant, and coal storage.

On the first floor: general waiting room, administration offices, at least fifty showers (forty with individual dressing rooms, and ten arranged in groups), lockers, dressing benches, toilet rooms, etc.

On the second floor, which may extend approximately two stories: a gymnasium, six showers, four sponge baths, a rubbing table, lockers, dressing rooms, benches, instructors' and medical attendants' rooms.

IF OF THE PAVILION TYPE: —

In the central part of the building: first floor to provide for a reception room and administrative offices. Second floor to provide a hall for lectures and other entertainments.

In one wing: a gymnasium with the same accommodations as recommended for the block type.

In the other wing: a swimming pool, the shower baths, and other features suggested for the block type.

GENERAL: —

In connection with the gymnasium a running track should be provided which will have not more than twenty-four laps to the mile. Other gymnasium apparatus need not be indicated.

Competitors are free to add any additional features to the plan and equipment which may seem desirable.

The exterior of the building is to be designed entirely in architectural terra cotta, employing color treatment in at least portions of the walls. It is suggested that large blank surfaces of gymnasium walls afford an excellent opportunity for design in terra cotta.

The following points will be considered in judging the designs: —

A. Rational and artistic treatment of the exterior. B. Frank and logical expression of the prescribed material. C. Excellence of plan.

It must be borne in mind that one of the chief objects of this competition is to encourage the study of the use of architectural terra cotta. There is no limitation of cost, but the designs must be suitable for the character of the building and for the material in which it is to be executed.

In awarding the prizes the intelligence shown in the constructive use of architectural terra cotta and the development or modification of style, by reason of the material, will be taken largely into consideration.

DRAWINGS REQUIRED.

On one sheet, at the top, the front elevation drawn at a scale of 8 feet to the inch. On the same sheet, below the front elevation, the floor plans drawn at a scale of 16 feet to the inch.

On a second sheet, at the top, the elevation of secondary importance drawn at a scale of 16 feet to the inch; immediately below half inch scale details of the most interesting features of the design. The details should indicate in a general manner the jointing of the terra cotta and the sizes of the blocks. The color scheme is to be indicated either by a key or a series of notes printed on the same sheet with the secondary elevation and details, at a size which will permit of two thirds reduction.

The size of each sheet (there are to be but two) shall be exactly 36 inches by 24 inches. Strong border lines are to be drawn on both sheets, one inch from edges, giving a space inside the border lines 34 inches by 22 inches. The sheets are not to be mounted.

All drawings are to be in black ink, without wash or color, except that the walls on the plans and in the sections may be blacked-in or cross-hatched.

Graphic scales to be on all drawings.

Every set of drawings is to be signed by a *nom de plume*, or device, and accompanying same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

The drawings are to be delivered flat at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., charges prepaid, on or before January 17, 1910.

Drawings submitted in this competition must be at owner's risk from the time they are sent until returned, although reasonable care will be exercised in their handling and keeping.

The prize drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish or exhibit any or all of the others. Those who wish their drawings returned may have them by enclosing in the sealed envelopes containing their names, ten cents in stamps, if on cardboard twenty-five cents in stamps.

The designs will be judged by three or five well-known members of the architectural profession.

For the design placed first in this competition there will be given a prize of $500. **For the design placed second a prize of $200.**
For the design placed third a prize of $100.

There have been published in THE BRICKBUILDER from time to time articles treating of the Public Bath and the Gymnasium, also illustrations of both types of buildings. This data, which may be of assistance to those who intend to enter this competition, will be found in the following issues: —

1909. February, March, April, May, June. **1908. February, March, April, May, June, August, November.**

We are enabled to offer prizes of the above-mentioned amounts largely through the liberality of the terra cotta manufacturers who are represented in the advertising columns of THE BRICKBUILDER.

This competition is open to everyone.